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Report on
The Physical Development of
St. Paul's School
Concord, New Hampshire

BY

Grosvenor Atterbury and Frederick Law Olmsted

With notes on some of the problems
connected therewith, past,
present and future

April, 1923

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Table of Contents.

SECTION

I.—LETTER OF EXPLANATION.

II.—INTRODUCTORY: THE GENERAL PLAN AND ITS FUNCTION.

III.—CONTINGENCIES AND ASSUMPTIONS UPON WHICH ANY SUCH PLAN SHOULD BE BASED.

IV.—TENTATIVE CONCLUSIONS DERIVED FROM THE FOREGOING SURVEY.

V.—THE GENERAL PLAN IN OPERATION: NECESSITY OF A SYSTEM OF CONTROL.

VI.—THE ORGANIZATION REQUIRED.

VII.—APPENDIX:

- A—NOTES ON EXISTING CONDITIONS.
- B—REPORT ON CONDITION OF EXISTING CLASSROOMS.
- C—NOTES ON THE GENERAL PROBLEM; THEORETICAL SYSTEMS OF GROWTH; AND EXCERPTS FROM PRELIMINARY REPORT DISCUSSED IN 1922.
- D—REPORTS OF OLMSTED BROS. (SEPT., 1898, AND JULY, 1899) ON THE DEVELOPMENT OF THE PROPERTY.
- E—REPORTS AND RECOMMENDATIONS OF THE ARCHITECTURAL COMMITTEE APPOINTED IN 1911—MR. STURGIS, MR. BORIE AND MR. MORRIS. (Nov., 1913) (Oct., 1914) (Jan., 1916) (Dec., 1917)

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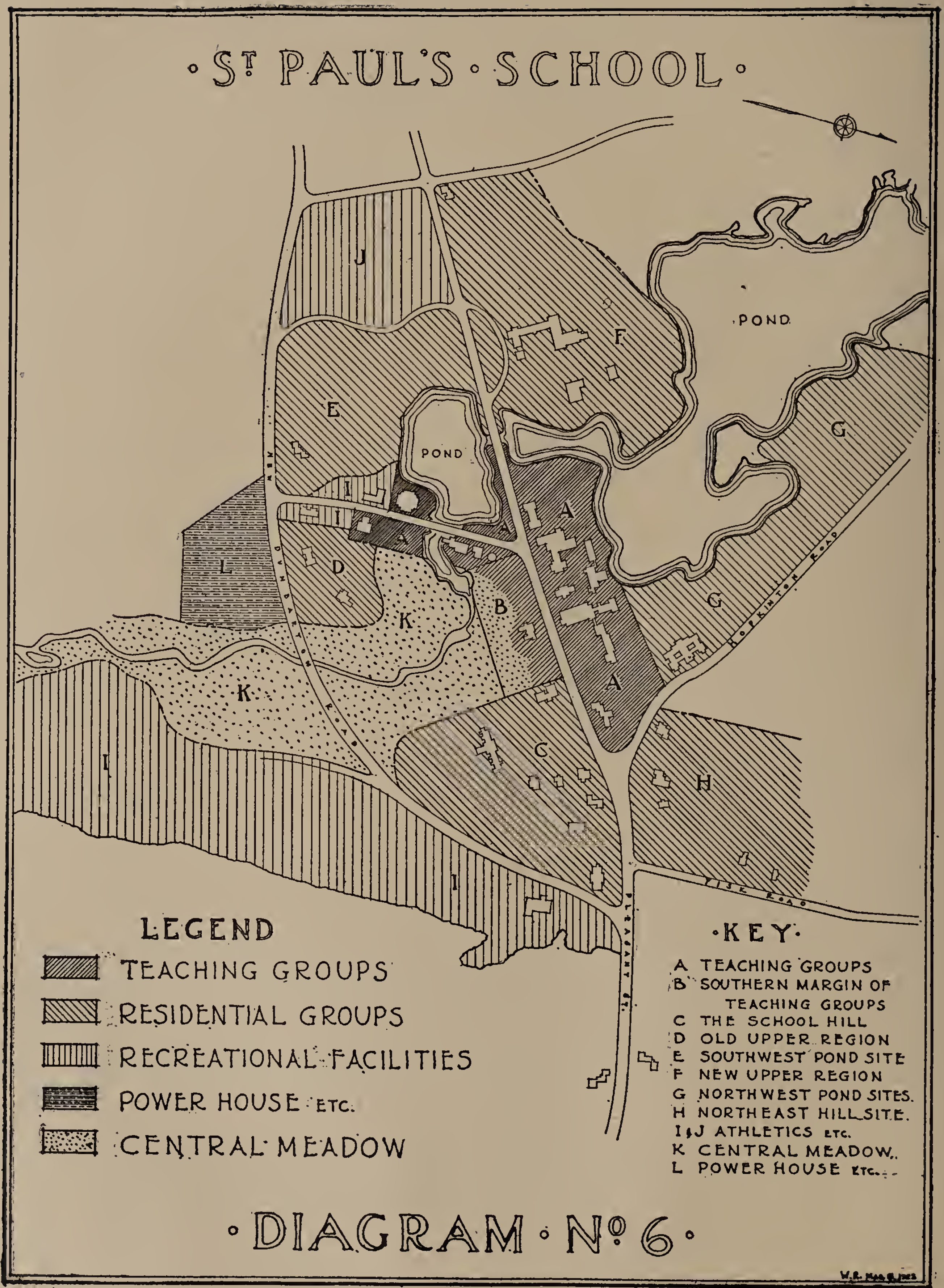


The above diagram shows the general subdivisions of the school property as discussed in "Notes on Existing Conditions"—Appendix A.

I.

LETTER OF EXPLANATION.

Messrs. Grosvenor Atterbury
and
Frederick Law Olmsted,

Gentlemen:

St. Paul's School began as a small family in a country home, with the Rector as the head of the family. As it grew, changes and additions were made to the plant as finances allowed, and as seemed immediately necessary. In those days there appeared to be no realization of the great size to which the school would grow any more than its possible future is foreseen now.

Starting with three boys in 1856, the School steadily and rapidly increased, until, when the first Rector died, in 1895, there were 339 boys. Long before this date the intimate family life, under the immediate personal influence of the Rector, had been lost, and the School had been placed upon its present basis of a group of schools under various house-masters, with the Rector as the general controlling influence. Whatever the advantages of the direct personal contact of the head-master with each individual boy, it was lost in the early '70s, as 150 boys seem to be about the limit of one man's direct personal influence.

While the School had thus changed its family relationship, no change seems to have been made in the method of its development, even though the problems had become infinitely more complicated in this respect.

While various studies of the development have been made from time to time, all of these bore upon certain definite items rather than upon the problem as a whole.

In December, 1911, an Architectural Board was appointed to advise on the physical development of the school, but this Board was seriously hampered in its work by past errors of judgment in the development of the property, and, moreover, its position and authority have never been such as to make its work as effective as it should have been.

The School now numbers 400 boys and any further expansion should be based on a definite plan, as a further increase will involve radical changes all along the line.

The Chapel, for instance, is filled to capacity, the housing accommodations are overcrowded and unsatisfactory, and the class-rooms have reached their limit of capacity, and are, in many cases, below the standard requirements.

From time to time, during the growth of the School, spasmodic efforts have been made to restrict the numbers, but, in spite of resolutions to limit the size, which have been passed by the Trustees, the pressure for admission has been too great to resist. The rapidly growing number of sons and grandsons of Alumni, together with the desirability of bringing in new blood, makes the problem of the future size of the School a serious one. No matter what limits may be placed upon the numbers by the present Board of Trustees, any succeeding Board may, at its pleasure, extend them,—as has continuously happened in the past.

Even if the School is kept at its present limit of 400, the changing conditions of school life make it necessary to have some well considered plan for the readjustment of the plant to meet present and future conditions, and in so doing to allow advantage to be taken of all the opportunities to increase the efficiency, economy and attractiveness of the layout.

In view of these facts I have been authorized by the Board of Trustees of the School to ask you to make a general survey of the entire situation and incorporate the results, together with any recommendations you may have to make looking toward the cure of the unsatisfactory conditions now existing and the wiser development of the physical plant in the future, in a report which I may submit for its consideration.

Very truly yours,

R. Brent Keyser.

II.

Introductory:

The General Plan and Its Function.

1. The reason for undertaking this present survey lies in the conviction that the time has come to consider and visualize the future development of St. Paul's School. Mr. Sturgis, Mr. Borie and Mr. Morris, constituting the Architectural Board, appointed in 1911, have generously devoted much time to the study of the physical development of the School, but their recommendations appear to have been considered only as they might apply to the urgent actual needs of the Institution as it exists today.

2. Any such limitation of the field of consideration, even if we were justified in assuming that St. Paul's School will never increase in numbers, is, we believe, unfortunate, leaving out of account, as it does, the normal changes, readjustments and replacements which are bound to occur from time to time, by reason of the continuous changes in the internal conditions of any live institution. Some policy and practical method of continuous control should be instituted, even if only to govern in the substitution of new buildings for old, in the intensive development of the property, in the addition of new functions or the rearrangement of physical units to meet new educational ideas and public requirements.

3. But the present inquiry is intended to go further, though in a broad and general way only, and deal with problems involved in a possible further growth in the size of the School; and to study them, not only with reference to past and present conditions, but with respect to the probable policies and contingencies of the future. It is hoped that such a study may help, not only in solving its physical problems but, perhaps, aid somewhat in formulating more clearly the educational ideals, policies and methods of the School, so that the physical plant may, at all times, be more closely adapted to the various functions which it is designed to accommodate.

4. While there are numerous advantages in presenting the results of such a survey in the form of a General Plan of Development, it is to be remembered that, should any schemes be presented in this report, they are not to be taken as a final solution of the problem.

Any plans which we may outline are for the purpose of further study and criticism; not a fixed formula, but an illustration in principle; not a conclusion, but a point of departure—though they may serve as a basis of what will, from time to time, crystallize into permanent form.

5. For the object of a general plan for the grounds and buildings constituting the physical plant of any long-lived institution is merely to serve as a sort of navigator's chart of a long voyage in a region never before sailed by the ship's officers. It is not a complete set of sealed orders to be blindly followed; it can not even be a complete and accurate chart, for the waters are waters of the future and have never been actually surveyed.

6. From an economic point of view the principal benefit of such a general plan is to avoid the wasteful expenditure of effort and money which results when improvements and additions, made from time to time, are carried out in such a way that they have to be abandoned before they have earned a fair return on the investment, or in such a way as to create embarrassing obstacles to other developments which later become necessary.

7. Such a general plan can not be based upon a certain and infallible forecast of future requirements; it must generally be altered and made to fit newly discovered requisites before its complete execution. But it can at least represent the best forecast that can be made at any given time. While its existence by no means guarantees against mistakes, it at least forces consideration, at each step, of the relation of that step to the development of the property as a whole.

8. Like the early navigator's chart, if corrected and improved as the voyage progresses, it is an immensely valuable tool, in spite of its defects, and makes the voyage safer than where reliance is put solely on what can be plainly seen from the deck from moment to moment.

III.

Contingencies and Assumptions Upon Which Any Such Plan Should be Based.

1. Those responsible for the administration of the School and its general policies must, if this inquiry is to be profitable, come to some conclusion as to certain contingencies to which the physical plant of the School will probably have to be adapted. There are some conceivable contingencies which can be ruled out as so improbable that they may be safely ignored. There are certainly others of which it can be said (after due consideration) that none of them is so unlikely to confront the School that it can be safely ignored as a possibility when devising a general physical plan.

2. But a plan well adapted to one of these groups of contingencies might be very ill adapted to another.

3. Therefore, if the School is plainly confronted with the dilemma that either one of two mutually exclusive contingencies is fairly likely to occur—as, for example, the contingency that the total number of boys will never greatly exceed the present number, and the alternative contingency that future managers of the School will find it necessary or expedient to provide for a large increase in numbers, as has happened in the past after the most positive and deliberate decision to permit no such increase—then it is apparent that the manner in which buildings and improvements are placed and designed to meet the more probable of these contingencies should be such as will not involve great and needless inconveniences, expense and embarrassment in case the other contingency turns out to be inevitable.

4. In respect to various contingencies controlling the general plan we will state in this report certain tentative conclusions which seem to us, upon the basis of what we have been told by those in authority, to be reasonable. In case the Trustees should find themselves unable to accept and to assume responsibility for any of these tentative conclusions, the ground should again be canvassed and more tenable conclusions adopted. In no case can there be justification for the indefinite postponement of decisions and a continuation of the drifting, hand to mouth, policy which has thus far prevailed.

Numbers.

5. One of the most important factors to be determined is the size of the School.

This question of the numbers to be accommodated so radically affects the whole plan that we have endeavored assiduously to bring to bear on this point the judgment of all those in a position to make a wise forecast. Summing up the judgment of the Trustees, the Rector and others, we come substantially to this:

The total number of boys is likely to be somewhat greater than at present;

It is very unlikely to be materially less;

It is not very unlikely to become, in the course of time, much greater, say six or eight hundred.

6. It is, therefore, important to devise and follow some plan which is not demonstrably open to the criticism either that it would involve serious and needless waste or inconvenience in case the number of boys remains substantially as at present, or that it would involve such waste and inconvenience in case the number of boys should be greatly increased in the future.

7. It is not as simple a problem as planning for a definite number, but it can be reasonably well met, and it is a real step forward to face it squarely.

Functional Factors.

8. The grounds and buildings and their accessories must be adapted first to the functions of the School as a place where a number of boys are to live under conditions as favorable as they can be made for their best development in body, mind and character. Some of these functions and the requirements which they seem to impose on the general plan are discussed below.

9. Next in importance we find a group of factors that, while they closely inter-relate, may be better discussed under the following separate headings.

Local Factors.

10. Every development must be adapted to the special limitations and special opportunities imposed by the locality, its topography,

soil, climate, vegetation, scenery and the existing buildings and other improvements.

Financial Factors.

11. Each step in any general plan, as well as the plan as a whole, must be limited to what is financially practicable.

Order of Consideration.

12. Since the importance of the objective is so great and since the financial limitations, though real, are not at all definitely predictable, it seems best to consider, first, the other two positively controlling factors, merely keeping in mind the need for reasonable economy; and afterward to apply such modifications, if any, as may be required by any possible lack of adequate financial means.

13. In the same way, while the local factors are in some respects absolutely controlling, it seems best to begin by inquiring into the main features of a physical plan ideally adapted to the functions of such a School, before attempting to fit the plan to the details of local conditions.

Certain Functions of the School and What They Require.

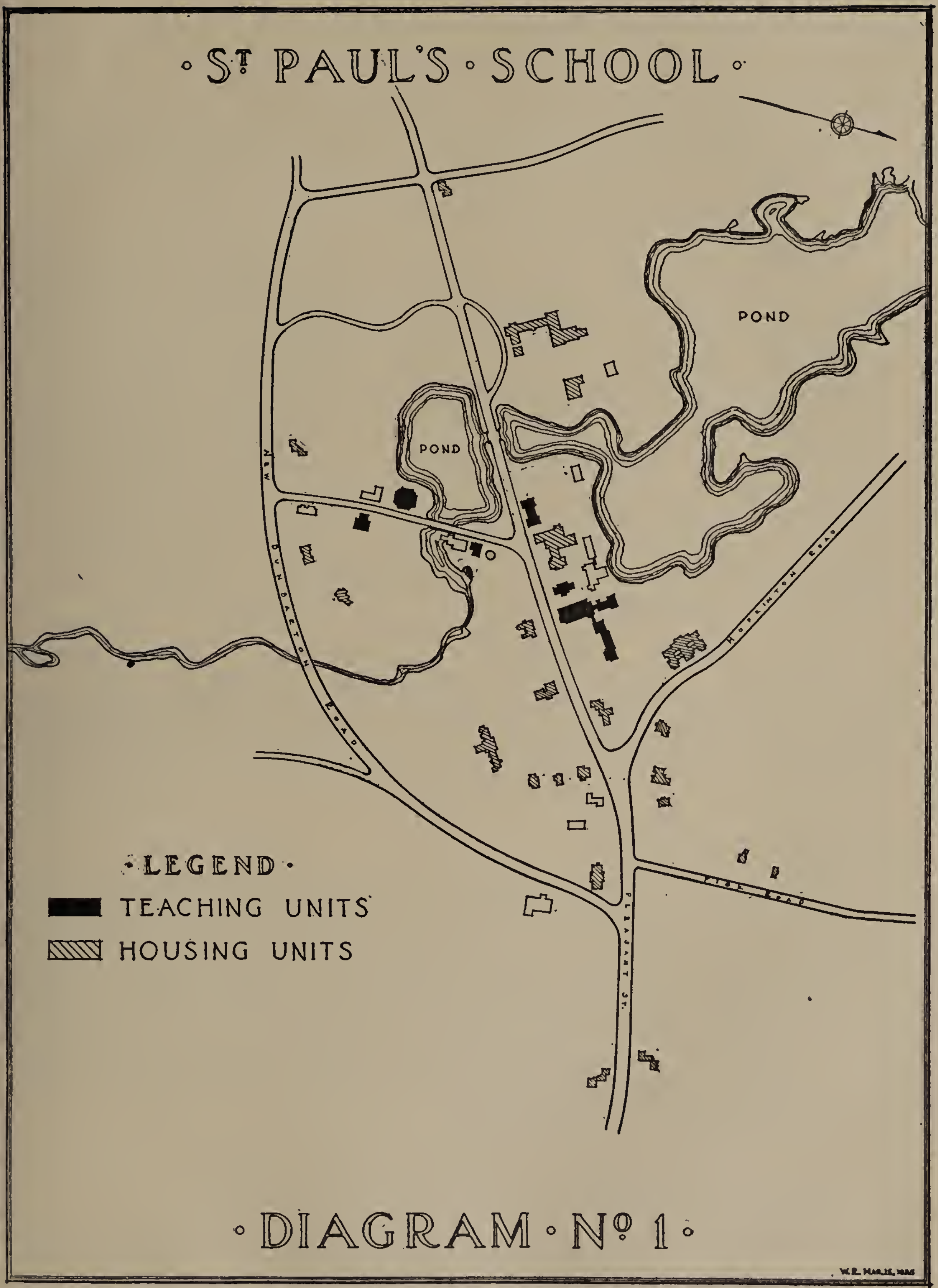
14. Without pretending to have made a thorough analysis of the School activities it is easy to see that most of them divide roughly into a few broad types, and that the methods of organization appropriate to one of these types may be, and often are, wholly different from those appropriate to activities of another type. And since the building space used for each type of activity must be adapted in its structure to the kind and size of units and the method of organization appropriate to that particular kind of activity, it is important to consider them at first separately, no matter how closely they may have to be joined in practice. For our present purpose they may be grouped thus: (1) teaching and studying; (2) religious activities; (3) lodging, boarding and the social activities associated therewith; (4) athletic activities; (5) services ancillary to the main business of the School. There are also important individual activities of the boys which do not fall precisely under any of the above heads, but these general divisions will suffice for a rough working classification.

15. The grouping of the boys for purposes of instruction is now and probably always will be different from their grouping for purposes of residence and for meals; changes in one of these groupings may become desirable, independently of changes in the other, making it important to house these two sets of functions, as far as practicable, in separate and distinct sets of buildings. And the same principle applies to the separate housing of other types of functions. The distribution of these functions among existing buildings is shown approximately on the accompanying plan (Diagram No. 1).

1.—Teaching and Study.

16. For purposes of instruction the boys are ranked, as in all schools, in "mental-age" groups by years, in the six "forms." And as each form has grown unwieldly in size it has been split into two or more "divisions." But for purposes of direct instruction the basic unit is the number of boys who can be effectively dealt with together by a single instructor during a single period of instruction in a single subject. These "class-room units" of educational organization determine the desirable size, number and distribution of the basic unit class-rooms of which the buildings for instruction must be mainly composed. Regardless of the age of the pupils or the size or other peculiarities of the School (after it has passed a very small size), there appears to be less difference of opinion and less tendency to change in regard to the desirable size and character of the ordinary class-room units than in respect to almost every other feature of educational organization and method. The size and number of forms, divisions and other major units of educational organization may change, the curriculum may change, the movement of boys from room to room may change, without requiring any different kind of class-rooms. For this reason it seems very desirable, looking ahead over a long period, that these relatively permanent physical units, the class-rooms, should be so placed and so interconnected by the halls, stairs and entrances which serve them, as to permit the greatest flexibility in their assignment to various "forms," "divisions," or other major groupings, and in their adaptation to any other changes of educational organization.

17. This means, first, that in so far as they constitute large buildings, those buildings should be capable of subdivisions so as not to mix the boys of different major groups too intimately in going and coming between class-rooms and to and from the buildings,



The above Diagram illustrates the actual distribution in 1922 among the existing buildings of the two main functions of the school—Teaching and Housing— as explained in paragraph 15, page 12.

and that the manner of this sub-division should be capable of much variation. And, second, that whether large or small they should be so close together and capable of such connection by cloisters or otherwise that it will not be seriously inconvenient for boys of any one major group to use class-rooms in two adjoining buildings in case the size of the major groupings should at any time fail to coincide with the capacity of individual buildings.

18. In other words, the ideal location of the rooms for instruction would be in a series of closely connected buildings with fairly numerous entrances so that they can be subdivided for operation into tolerably independent and self-contained major units, varying in size from time to time, without radical structural changes, except in case of an increase in total numbers, which would be provided for by adding another block of class-rooms. In so far as large rooms are desirable, where all the boys of a "form" or other major unit of instruction can be assembled for study or for lectures, such rooms should be divisible by partitions or extensible by the removal of partitions in case it should ever prove desirable to change the size of these major units radically.

19. All of this closely connected and more or less interchangeable series of buildings for instruction should be centrally located, conveniently accessible from the residence buildings, but not so closely hemmed in by the latter as to block expansion of the central group when required.

2.—Religious Activities.

20. The general opinion appears to be that all of the boys should be gathered for worship in one Chapel in the Central Group. Such a building cannot be designed to be indefinitely expansible in capacity. If the School should expand beyond the capacity of the Chapel, with such enlargement of the latter as is suitable, the only possibilities are to divide the congregation or to build a new and larger Chapel. In the former alternative the youngest boys would naturally form a separate congregation.

3.—Lodging, Boarding and Associated Social Activities.

21. The number of boys constituting each one of the special units, or groups, housed in separate lodging and boarding places, is determined at present, not so much by any deliberate opinion con-

cerning the proper size of such a group, as by the varying physical capacities of the several buildings which happened to be available, some having been built for the purpose in the days of a smaller school and some being converted private dwellings. The same accidental circumstances have forced the school authorities in some cases to include boys of widely different age classes in the same residential or social group, contrary to the earlier conception under which boys of different age classes were intended to be sharply segregated from each other in their lodging and boarding places as well as in their studies. The conditions thus imposed by the accidental disparity between the buildings available for lodging and boarding and the theoretical organization of the boys by age classes, has at least afforded some interesting experimental evidence of the advantages and disadvantages of widely varying sizes of house units, and of different methods of segregating and combining boys of different ages in respect to lodging and boarding.

22. As to the size of housing unit, opinion at St. Paul's seems now to favor unit groups of not over forty boys, each with a house-master and an assistant house-master.

23. As to the ages of boys to be included in a single "house," there is evidence of a shift of opinion in favor of bringing boys of different ages into that intimacy of contact which comes from living together in the same house and away from the earlier conception of sharply segregating the age classes in their lodging and boarding places.

24. From what we have gathered at other schools there appears to be even more uncertainty and difference of respectable opinion as to the best method of grouping boys for residence than in regard to their grouping for purposes of instruction. Some educators favor a house unit as small as twenty-five boys. Some, in view of the great value of bringing each boy directly under the influence of some strong and inspiring personality and in view of the great difficulty of securing a large number of house-masters of such large calibre, are opposed to small separate "houses," whether of 25 or 40, as tending to minimize the intimacy of contact of most of the boys with the personality of any notable person of "head-master" calibre —that rare type of personality of which a school is fortunate to have one or two and very rarely can expect to have many. Those who hold such views believe it very important to bring as many boys as possible in the closest possible association with one of those

rare leaders and moulders of boys, and seem to regard a closely associated unit of about 100 to 150 boys as the ideal, on the ground that less than 100 does not begin to use such a personality to its full capacity, and that if the number of boys under him is increased very greatly beyond 150, the intimacy of contact is apt to be lost.

25. It is generally recognized that when a school passes a certain size there is an inevitable and critical change in the intimacy of the personal relation of the head-master to most of the boys. That critical size depends on many factors, notably on the personality of the head-master—his "extensibility," so to speak—and on the physical arrangement of the building or buildings, as tending to facilitate or discourage his intimacy of contact.

26. Whether we like it or not, St. Paul's School appears definitely to have grown beyond that critical size of the "one-man school," and some of the important personal functions performed by the head-master of such a smaller school must inevitably at St. Paul's be delegated to house-masters, or what might be called "deputy-head-masters." The difficulty of securing a large number of men of just the right qualities for such functions can not be ignored.

27. It is not for us to express an opinion on such moot points of educational organization as those controlling the best size of house units; but because they are moot points today and because educational opinion is likely to change in the future, one way or the other, as it has done in the past, we can not help thinking that the safest physical solution would be one adaptable to at least two different methods of organization. We can conceive an architectural unit, consisting of three or four distinct "houses," each with house-masters' quarters and quarters for from 25 to 40 boys, so arranged that each house could, if desired, be operated quite independently of the other "houses" in the group, and yet so arranged that by changing a few doors or providing cloister connections between adjacent buildings, they could be operated as a unified group housing some 150 boys under the direction of one principal house master, or "deputy-head-master."

28. Another purely mechanical and economic factor pointing in the same direction is that for the cooking and serving of meals there is a marked loss of economy in adopting a unit as small as 40 boys, and that the gain in economy through increasing the size of the unit is not very notable after reaching a size somewhere between

100 and 200.. It would, therefore, be economical and convenient to have one kitchen and dining-room unit for as many lodging units as would house about 150 boys.

29. These considerations seem to point toward the conclusion that the best arrangement of buildings for residence and meals in a school as large as St. Paul's has already become, and especially if it shall become larger, would be a series of groups, each group housing and feeding about 120 to 150 boys, but with such physical sub-divisions as would permit organizing the boys into "houses" not exceeding 40 boys each, with quarters for a house-master and assistant house-master to each "house." This arrangement would permit great flexibility of management, emphasis being thrown more or less strongly on the unity and individuality of the small "house" unit of boys or on the larger "group" unit as experience may dictate.

30. One extreme of policy would manage each "house" unit quite independently of the other houses of the group, the common kitchen facilities being the only bond between them not shared with the rest of the school.

31. The other extreme would place a "deputy-head-master" in charge of each group and might assign to each group its own special portion of the central buildings for teaching, developing a strong and distinctive local community spirit and life for each group, with inter-group athletic contests and so forth. Such an organization would make it possible to utilize very effectively one of the great potential assets which a large school like St. Paul's has. That asset is the opportunity for sorting and grouping boys according to their intellectual and spiritual qualities, tastes and needs; each group, like one of the Colleges in an English University, coming, in time, to be recognized as affording special advantages for certain types of boys and being able to deal with them more effectively because of the absence among them of boys of a sort who would be dealt with better by other methods in another group or "college."

32. Since it is evident that there are two principles of organization involved, each having good points to recommend it, and since it is probable that opinions may shift from time to time as to the best method of combining or adjusting those principles to each other in practice, it seems clear that a physical plan well adapted to either extreme or to a middle course has everything in its favor.

33. Architecturally, such a group as we have in mind might be either in the form of one large building, about on the scale of the present "Upper School" building, but divisible by party walls and doors into "house" units of suitable size (possibly even arranged so as to permit a choice between division into a larger number of house units of minimum size and division into a smaller number of house units of larger size), each unit having its separate entrances. This would represent the institutional or dormitory type. On the other hand it might preferably consist of a series of architecturally distinct "houses," rather closely grouped and connected (or readily connectible) by cloisters or corridors with each other and with the central kitchen and dining facilities serving the whole group. This would typify the domestic or cottage principle in the housing of the boys.

34. Groups of this sort should be planned for in locations conveniently near the central group of buildings used for teaching and such other functions as serve the occupants of all the groups, but so placed as not to block a considerable expansion of this central group in case such expansion should prove necessary. The whole would be, in miniature, like a village, with its central business district surrounded by residential areas not quite contiguous with each other, but more or less separated by playgrounds, parks and other open lands, and with the "utilities" of various kinds ancillary to residence and to the primary business of the community fitted in as might be found most practicable and satisfactory.

4 and 5.—Athletics and Service Facilities.

35. The arrangements for athletics and for service facilities are so closely controlled by topographical conditions and, as far as their functional requirements are concerned, can be so flexibly adapted to the plan requirements of the three primary functions above discussed that they need not at present be analyzed further.

6.—Local Factors.

36. No one familiar with the exceptionally beautiful tract of land and water which constitutes the site of St. Paul's School will question the importance of its influence on any plans for its physical development. Nor for that matter, on the functioning of the institution as such. How any one could live in such natural surroundings and not be influenced by them, whether he realizes it or not, is hard to see.

37. Quite apart from the economy and, to a certain extent, the practical necessity of taking into consideration the topographical conditions as affecting the location and arrangement of buildings, there is in this case an unusual importance to be given to the preservation and enhancement of the sentimental and aesthetic influence of its natural setting upon the school—both masters and boys. Buildings and groups may be so placed as to do no violence to natural grades and be perfectly suited in style and handling to their locations, and yet entirely fail to take advantage of the wealth of local beauty whose influence should, of course, be used to the utmost as a priceless element in the atmosphere of the School.

38. While it may not be practicable for the curriculum to comprehend the study of art in any of those forms in which we spell it with a capital "A," the unconscious development of the sense of beauty can not fail to grow in such an environment as is possible at St. Paul's.

39. But we use the word "possible" because, while the natural background is unsurpassed for such a growth, its architectural development is in many respects quite the contrary. Not only does it fail in many cases to enhance the effect of a rarely beautiful site, but actually handicaps its influence.

40. This question of the existing structures is one of the most puzzling elements in our problem. The continued retention and use of existing buildings, except in those cases where the practical and aesthetic objections to so doing are indubitably too great, is enforced alike by financial limitations, by a very proper historic sentiment, and by a cautious conservatism which recognizes that always there are some points among those in which the preferences of a new generation conflict with those of an older one, as to which the difference is due more to passing fashions of thought than to really permanent progress. From every point of view it is our presumptive duty to preserve, utilize and adapt whatever serviceable thing we have inherited from the past as far as patient ingenuity will enable us to do so without manifest and serious sacrifice.

41. Structures which, because of their location and character, clearly can not be permanently adapted to the needs of the School without too great a sacrifice should be deliberately rated as "temporary" and disregarded as "useless," in devising the general plan, even though their temporary retention may influence the order in

which the parts of the general plan can be executed. Others should be as deliberately rated "permanent," with or without modification in detail, and the general plan adjusted to their permanent retention. The drawing of this distinction depends on a nice balance of many factors, structural, functional, aesthetic and financial. It ought to be carefully reviewed in detail after arriving at a conclusion on the broad outlines of a general plan; but for the purpose of arriving at those outlines we have been forced to make certain assumptions, roughly dividing the present buildings into "permanent," "doubtfully permanent," "probably useless" and "useless," as shown on the accompanying Diagram No. 2.

IV.

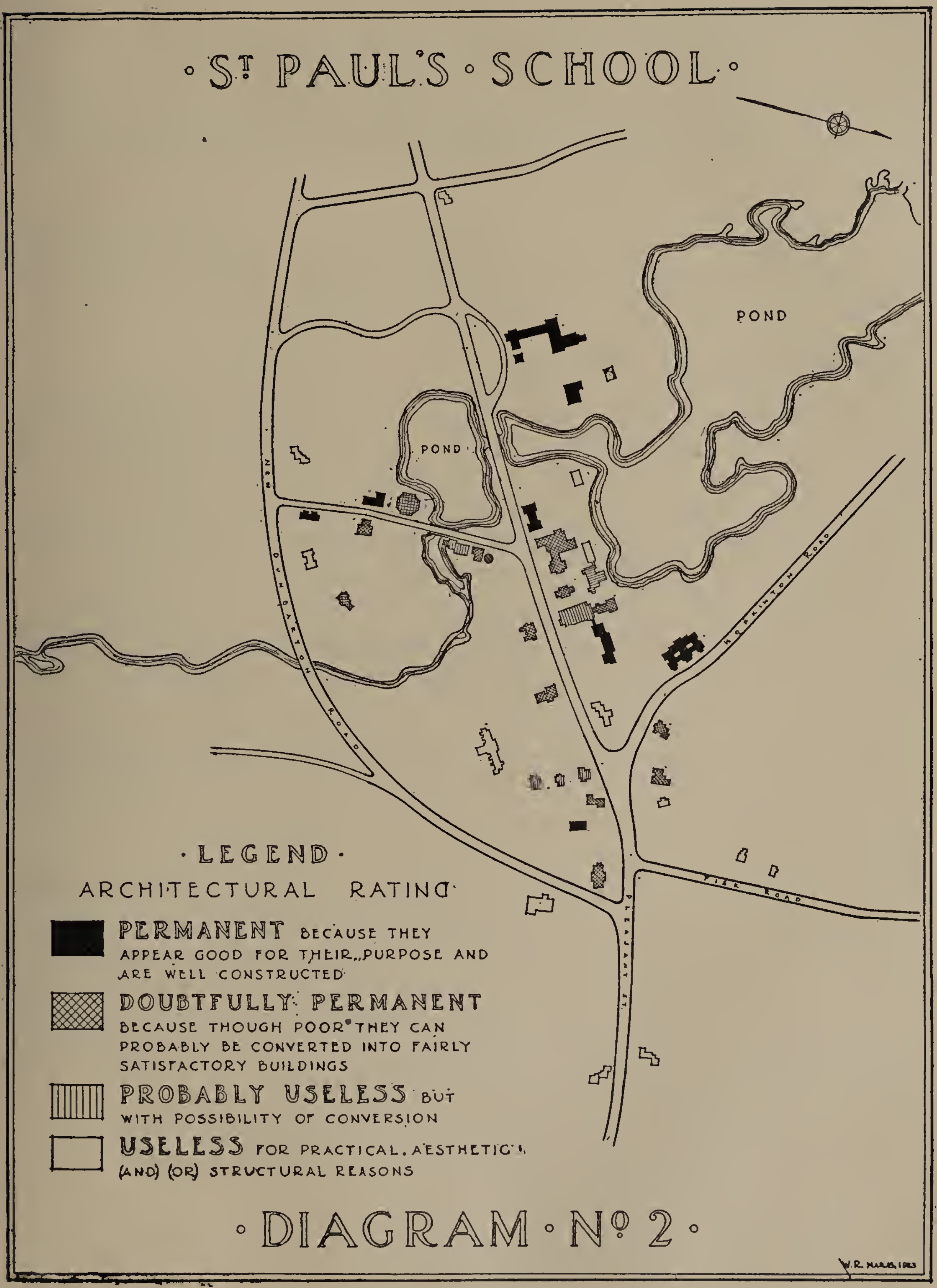
Tentative Conclusions Based on the Foregoing Survey.

Architectural Style.

1. It is evident from the foregoing survey that the logical physical expression of the School organism as a whole will neither be entirely concentrated nor entirely distributed in its character—neither all large buildings closely grouped together, nor all small buildings spread out over the property. And in the matter of architectural style a certain variety may logically result in the housing of the different functions of the School. If its size were greatly reduced this would not hold true, but under all the conditions reasonably to be expected the organization to be housed is sufficiently large and diversified to permit and even to demand a certain range in style.

2. This does not mean license and anarchy, but reasonable liberty within the architectural laws of harmony. Styles may be technically different, but aesthetically harmonious.

3. It must be remembered that a great school differs from most other institutions in the multiplicity and extraordinarily wide scope of its functions. As elsewhere suggested, it is like a whole town in itself, and by its very nature should neither be cramped into a physical shell dictated by a priori preferences for any given style or styles, nor arbitrarily "institutionalized" in appearance by being dressed in a livery, even a perfectly convenient, sensible and handsome livery.


ST PAUL'S SCHOOL
POND
POND
NEW DUNBARTON ROAD
HOPKINTON ROAD
FISK ROAD
PLEASANT ST.
LEGEND
ARCHITECTURAL RATING
PERMANENT BECAUSE THEY APPEAR GOOD FOR THEIR PURPOSE AND ARE WELL CONSTRUCTED
DOUBTFULLY PERMANENT BECAUSE THOUGH POOR THEY CAN PROBABLY BE CONVERTED INTO FAIRLY SATISFACTORY BUILDINGS
PROBABLY USELESS BUT WITH POSSIBILITY OF CONVERSION
USELESS FOR PRACTICAL, AESTHETIC (AND) (OR) STRUCTURAL REASONS
DIAGRAM No 2
W.R. MARB, 1923

The above Diagram illustrates the method of rating the buildings existing in 1922, when considering any general plan, as suggested in paragraph 41, page 19.

4. If its various functions would naturally require a certain variety, the architectural expression of the organism as a whole, therefore, should be found either in a style of more than ordinary flexibility or in the use of a number of styles such as will specifically meet the requirements of individual functions and yet in general produce a harmonious effect.

5. Normally the architectural expression or style of a development will have a certain direct relation to the general plan as well as to the use for which the buildings are designed.

Various Determining Influences.

6. While the existing buildings at St. Paul's make the problem distinctly sui generis; and, in so far as they must be regarded as permanent, will modify any such normal relation, the choice of architectural style or styles most suitable to the future development will still be largely influenced by the functions of the buildings and the general plan of their arrangement on the property.

7. Perhaps the most potent element in this connection is the policy of distributed housing—the small house system—which we understand to be accepted by substantially all those interested.

8. This is in contra-distinction to the large dormitory system and means a series of groups composed of cottages, each accommodating from 25 to 40 boys and two resident masters, with dining halls and a common kitchen to serve from 120 to 150 boys.

9. This system would logically apply to all forms but the two lowest, where it is assumed that the single large dormitory like the existing "Lower"—is the more desirable. But in view of the fact that the existing "Upper" is a comparatively new building of a substantial character, the small house system will, for a long time, be confined to the third and fourth, or intermediate forms, possibly including the fifth form, if, and when, the sixth form becomes large enough to occupy the entire "Upper" building.

10. These conditions, therefore, seriously modify the application of the small house system and, in consequence, affect the architectural problem proportionately.

11. On the other hand the teaching units are directly affected by their proximity to the existing Chapel.

12. Under the circumstances an obvious solution would be to reconstruct the present "School' building and "Annex" in harmony with the Chapel and any additions thereto. This means that the teaching or class-room group, in general, might properly be Gothic, based on the style now exemplified in the Chapel.

Two Alternatives.

13. The question then is reduced to that of determining the style to be adopted for the new housing units, either additional or as replacements of the existing buildings, and for such teaching units as are not directly contiguous to the Chapel and of such substantial character and usefulness for their purposes as to make alteration preferable to demolition. The present "Lower" now used wholly for living purposes is an example.

14. On the one hand it would be logical to adopt a Collegiate Gothic type, as typified in the new "Upper" and the Chapel, the two largest and most substantial buildings on the property, for all the teaching units and to harmonize with it an English domestic or cottage type for the housing groups. Such a plan would permit of an informal treatment capable of much charm and would not necessarily mean a pretentious development. Its tendency, however, would be, in this country, to emphasize somewhat the institutional character of the community. The Infirmary and one or two other recent structures have apparently been designed with this general plan in mind.

15. On the other hand it is possible to conceive of the entire development as a village-like community gathered around a teaching institution or local school and chapel. In such case no attempt would be made to relate, architecturally, the housing groups and units to the teaching group. The prototype would be found in a small New England village in which the chief interest and the only architectural feature was a boys' day school.

16. Apparently it was with such a conception in mind that a number of recent buildings, such as the Cage and Squash Courts, Friendly Hall and Community House, have been designed, while substantially all of the wooden cottages would lend themselves to modification in accordance with such a plan.

17. Either one of these two general principles, if followed consistently, and with even very modest skill in designing, would have given good results. But following first one and then the other, or

both, or neither, at one and the same time, has produced an utter jumble that is neither harmonious, dignified nor picturesque; that produces no clear impression as a whole yet serves to vividly emphasize all the ugly buildings, while it stultifies the leavening effect of those that are good.

18. Unless, therefore, the elements of waste in demolition and expense in new construction can be eliminated from consideration the problem is reduced to a determination of which of these two alternative general conceptions can be recaptured and followed with the least cost, and, consequently, the best chance of realization. Thus far we can go with some confidence. But the making of the final choice between these two alternatives requires an extensive study of the situation such as is not contemplated in this Survey and Report.

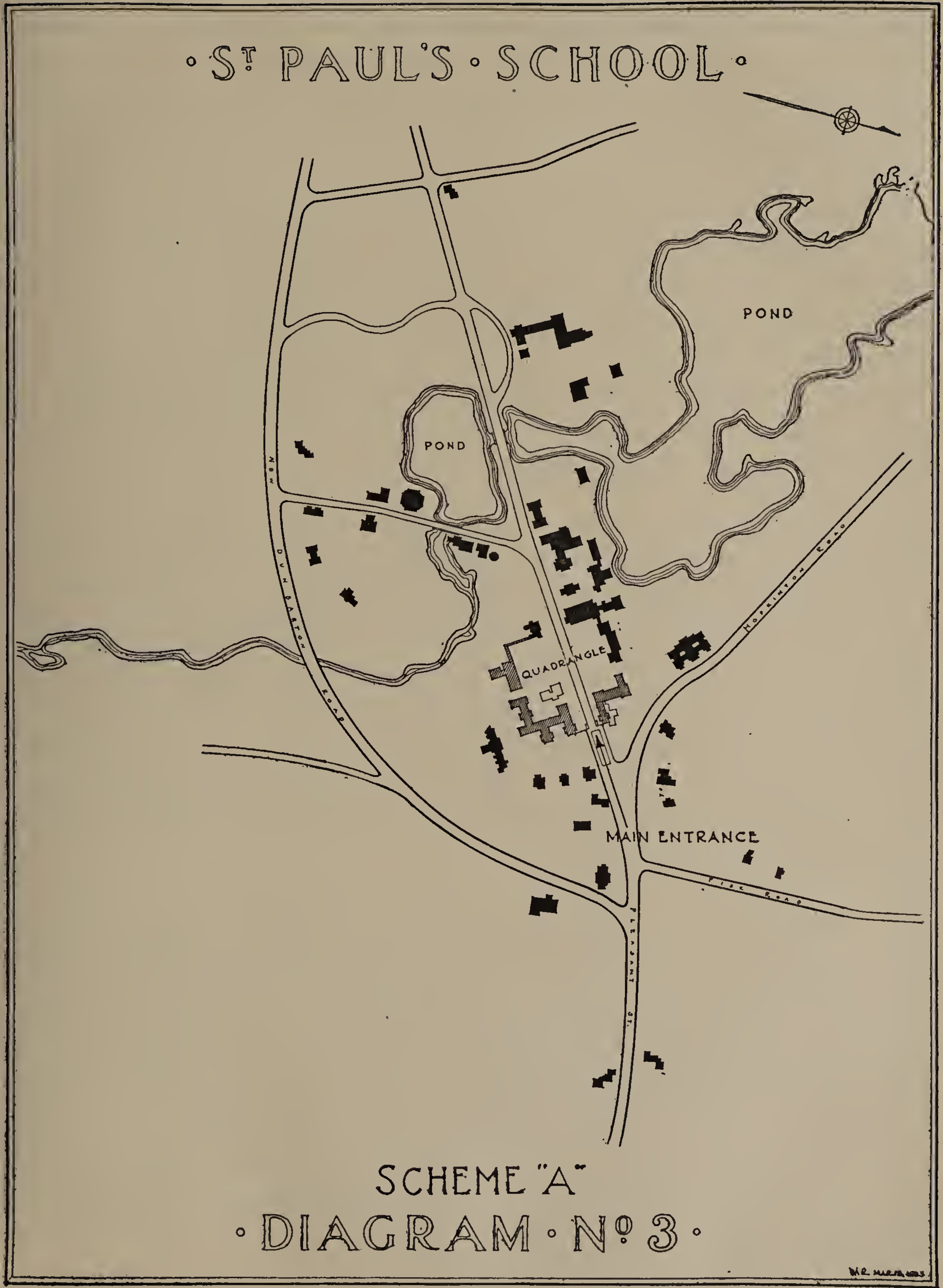
General Plan of Development.

19. We now come to the practical application of the above considerations to the actual conditions of St. Paul's, not with the idea of laying down a definite program, but to illustrate certain principles to be considered in formulating any General Plan.

20. Even assuming that the School definitely adopts the principle of centralized teaching and distributed housing, there are several ways of following this principle, in the development of the general plan as well as in the matter of architectural expression.

21. The accompanying diagrams illustrate various types of general plan.

22. First; a distinctly formal grouping of the central and teaching units, as suggested in Scheme A (Diagram No. 3). This scheme has a tendency to emphasize the institutional element, even though the housing units be kept separate and informal in character. Very properly it makes use of the existing Chapel as an effective basis for an impressive quadrangle, but, in our opinion, to do so successfully, would require pretty radical alterations in natural grades, and, consequently, involve a more formal treatment. The location of the quadrangle again, fixed as it is by the existing Chapel, brings the group into immediate proximity to the public highway (Pleasant Street and Holliston Road) and the main entrance to the property from that highway. This may be good from the point of view of making these buildings count impressively to one approaching the entrance.

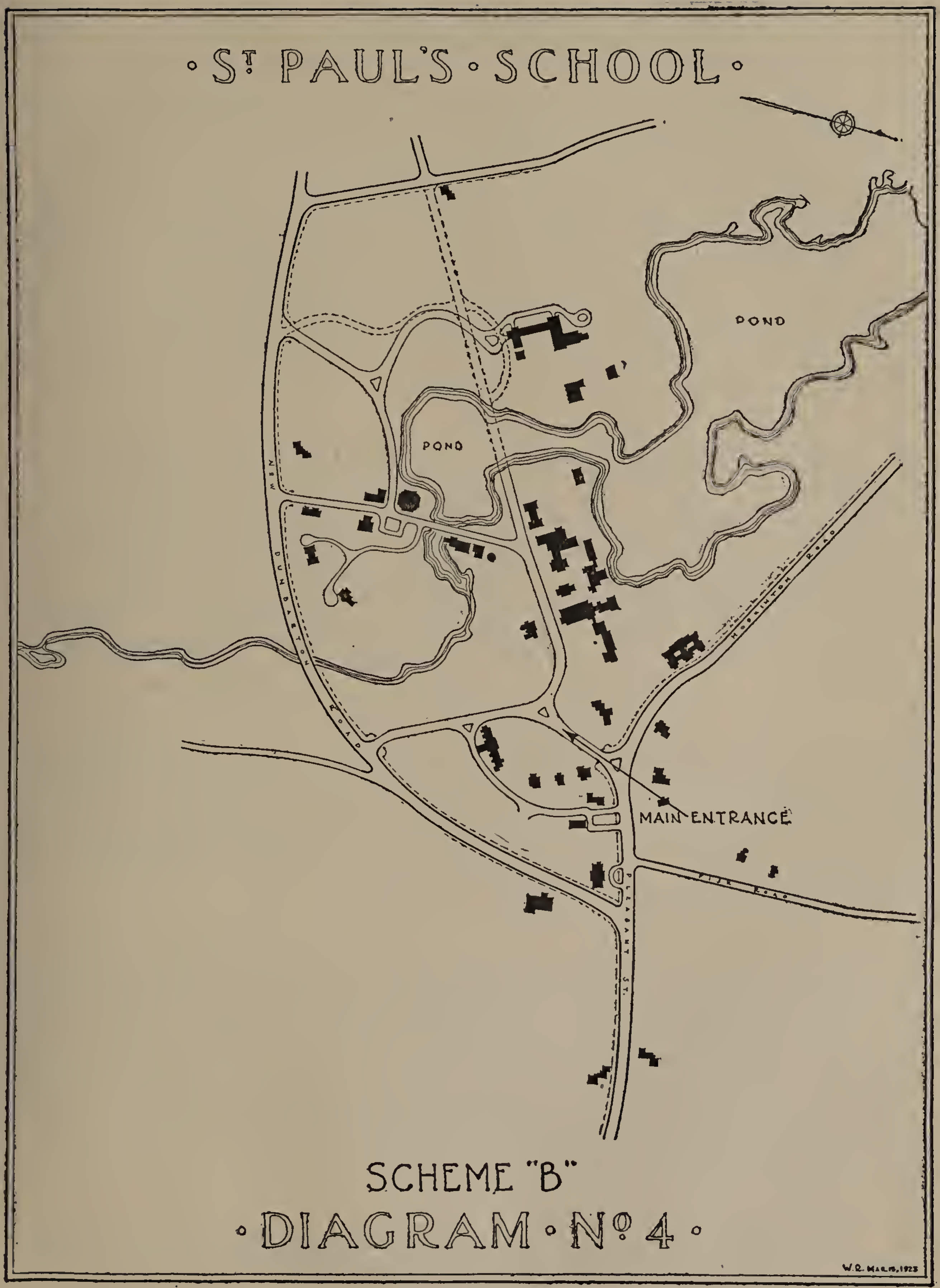


The above Diagram illustrates in principle one of the possible methods of treating the entrance and general road system with relation to the principal buildings on the property, as explained in paragraphs 22 and 24, pages 24 and 26. This rather formal treatment, involving a quadrangle, is substantially that suggested by the Architectural Committee in 1911. The diversion of the Dumbarton Road, already accomplished as a first step toward the realization of this plan, is equally valuable for any type of plan.

23. On the other hand it raises two questions: first, can the immediate approach down an eight per cent grade to such a group of buildings be successfully handled; and, second, is it desirable, even if this can be done, to so emphasize its formal and, consequently, "institutional" aspect. One other consideration should also be borne in mind. In its very nature this plan, to be successful, must be complete; and if it must be executed progressively, section by section, the effect during the years of its gradual accomplishment will not be particularly happy. Whether such a plan, also, is sufficiently flexible to permit of the various changes likely to be required from time to time under such circumstances is, perhaps, a question to be considered. Of its effectiveness from many points of view and of the possibilities of architectural dignity and charm in itself there is no question.

24. But quite apart from the foregoing considerations, which are largely architectural, it is to be noted that the completion of such a quadrangle calls for a very much greater addition to the teaching units than is ever likely to be needed at St. Paul's. This is assuming, of course, that the principle of the small house system, distributed in groups, each group housing around 150 boys and removed from the teaching center, is to be adopted as against what may be styled the College Dormitory System, and, therefore, that the quadrangle would not combine, as originally suggested, both dormitories and class-rooms.

25. Scheme B (Diagram No. 4) is a suggestion of a more informal treatment and one that might have certain advantages, both practical and aesthetic. First, the expansion of teaching facilities would be obtained by additional buildings informally disposed within the central area. Second, the main entrance would open, not directly into a group of buildings, but into the property in general. Third, by this means the buildings will be kept further from the public road and main entrance. The natural grades would be more nearly respected and by lengthening the approach the unfortunate "downhill" effect will be very largely obviated.



The above Diagram illustrates in principle a more informal treatment of main roads and buildings—with the entrance leading into the property as a whole, rather than a formal group of buildings—as explained in paragraph 25, page 26.

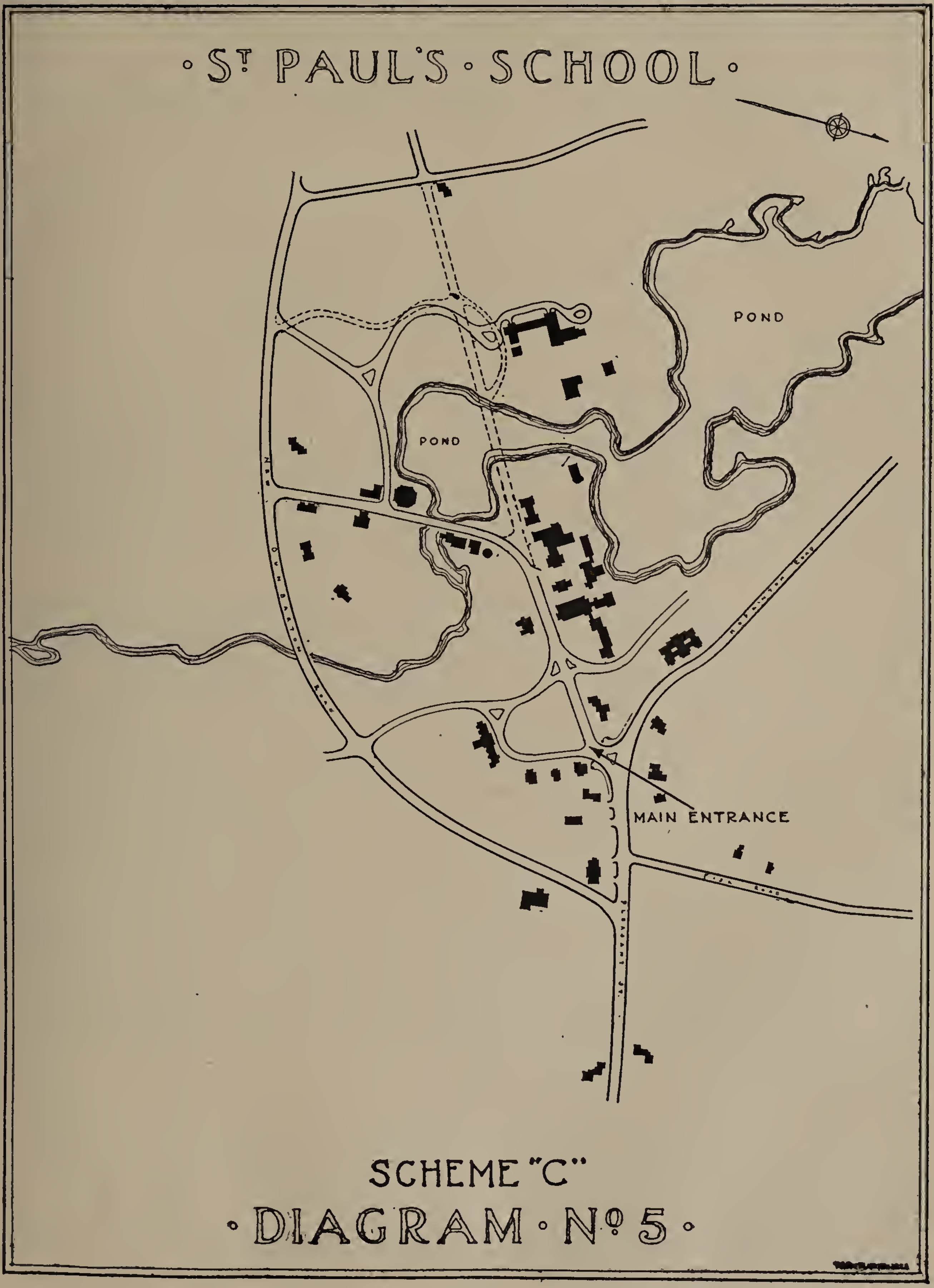
26. From the landscape point of view the emphasis, in this case, would be transferred from the descending private street or roadway as a continuation of the public highway to the vista which would result from opening up the meadow, through which the stream runs and which was suggested some years ago in a report of September, 1898, by Mr. Olmstead, as being, on the whole, the most logical and effective focus of the entire development. At present this valley and meadow, around which the buildings are ranged, is largely obscured from view—almost entirely so from the point of entrance—so that it is difficult to visualize the effect which would be produced by the proper clearing and planting. The scheme, however, has certain advantages and possibilities that make it worthy of serious consideration.

27. Scheme C (Diagram No. 5) in a sense is a combination of the principle of the direct street entrance as it exists to-day, as architecturally emphasized in Scheme A, and the informal and less pretentious character of Scheme B. Like that scheme it assumes no large and distinctly dominating group of buildings. And in this connection it is well to remember that under the small "House" system the material for composing any such group is substantially lacking.

28. While the Chapel, the present school house and its annex might be re-grouped for such a purpose, no very great additional class-room area would be required, as will be seen from the Appendix (Section VII-B), even were the number of boys increased to six hundred, assuming, of course, the reconstruction of the ill-adapted buildings, now used for teaching purposes.

29. Practically speaking, we are probably justified in questioning the value of any plan that would involve, for its successful execution, the substitution of new buildings for practically all the existing teaching units outside of the Chapel, and nothing short of this would produce anything in the shape of a formal and dominating group at once harmonious, beautiful and impressive from a purely architectural point of view unless housing units were made part of the central group for this purpose.

30. Whether Scheme C, by reason of its unpretentious character, would avoid challenging criticism and yet permit any such radical



The above Diagram illustrates in principle a combination of the distinctive elements of the two previous schemes—the direct entrance of "A" with the more informal grouping of the principal buildings shown in "B"—as explained in paragraph 27, page 28.

improvement in the character of the various structures and their relations to one another as the existing conglomeration calls for is questionable, to say the least. But it is one of the possibilities that the exigencies of the problem before us makes it necessary to study.

V.

The General Plan in Operation: Necessity of a System of Control.

Difficulties to be Met.

1. If any general plan is to be of real value, it is essential to set up proper administrative mechanism for making it useful, for extending, correcting and perfecting it, and for actually securing those results, in economy and excellence of grounds and buildings, for the attainment of which plans are only inert tools.

2. The business of designing, executing, maintaining and altering the buildings and grounds of an institution like St. Paul's School in such a manner as shall reasonably approach the best that is attainable, in respect to convenience, beauty and economy, is one of the most highly technical and complex businesses for which the Trustees of the School must be held responsible. In getting it done they must inevitably depend first and last upon many subordinates skilled in matters which lie beyond their personal skill; such as architects, landscape architects, engineers, builders, gardeners and craftsmen too numerous to mention. In regard to any single operation, such as the design and construction of a single building, they can and do largely rely, for the co-ordination of the work of multifarious collaborators towards the end in view, upon one principal designer and manager, skilled and experienced in such co-ordination,—the architect employed temporarily for that particular undertaking.

3. But the problem of properly co-ordinating all the operations affecting the buildings and grounds over a long series of years is much more complex and difficult than the co-ordination of the operations required in designing and erecting a single building. It involves a much wider range of technical questions and more difficult and debatable decisions. Because of the very fact that these

decisions do not follow quickly one upon the other as part of a limited operation on which the mind can be closely concentrated from start to finish, so that the considerations governing one decision are easily kept in mind when the next decision is to be made—because, on the contrary, the decisions may be made at relatively long intervals and under the pressure of very different sets of circumstances it is extraordinarily difficult to co-ordinate them effectively so as to get anything approaching the maximum cumulative value which the successive operations are capable of producing.

Method of Control.

4. For these reasons we believe that reasonably good results in respect to buildings and grounds, in the long run,—let us say covering a period of thirty or forty years,—can not possibly be secured except by the continuous and active control of some technically competent, permanently continuing and definitely responsible architectural advisory agent, or agents, to assist the Trustees in reaching decisions respecting all physical changes in the buildings and grounds.

5. To the same end we believe there should be a standing committee of the Board of Trustees whose function should be to deal with all problems affecting the organic structure of the physical institution. While this responsibility, like all others involved in the conduct of any large organization, rests ultimately with the entire body of Trustees, it is highly desirable, if not actually necessary, to concentrate such responsibility and its corresponding authority in the hands of a Special Committee just as much in the case of the physical plant as in the matter of finance and operation.

6. In other institutions of similar character such a committee is called the "Committee on Physical Development" or, in many cases, simply the "Building Committee." The business of this committee, representing the Board of Trustees, is to interpret in physical terms the general policy of the Board, aided, on the one hand, by the expert knowledge of the educational problems, supplied by the Executive Head of the Institution, and, on the other, by the Advisory Board's technical knowledge of the architectural, landscape and engineering questions to be solved.

7. And we believe that the same reasons that make it wise to put such control in the hands of a committee, rather than a single Trustee or Officer of the Institution, argue convincingly for an

Advisory Board of two or more members, rather than a single person. In both cases continuity of policy, safer and more authoritative judgments and greater reliability of service is secured thereby.

Organization.

8. Such an arrangement for the control of the physical plant of the School is by no means inconsistent with its existing organization. It is, in fact, a perfectly normal and ·practical method of securing the ends sought and functions along similar lines in numberless institutions.

9. Almost all large organizations are built along certain standard lines, modified only to meet the special requirements of the particular work to be accomplished. And St. Paul's School is no exception.

10. The object of St. Paul's is the education—mental, moral and physical—of boys, and the Trustees and Executive are selected primarily for their ability to secure this. This object involves three distinct elements: 1st, the mental, moral and physical welfare of the boys; 2nd, the financial means to carry this out; and 3rd, a proper physical plant.

11. The organization of St. Paul's, therefore, should be based, logically, on a Board of Trustees, and, under it and directly responsible to it, a Rector (the Head of the "Operating Department") in charge of all that applies to the mental, spiritual and physical development of the boys; a Finance Committee, responsible for the financial concerns of the Corporation; and a Buildings and Grounds Committee in charge of the physical plant. These three agencies, or departments, are responsible directly to the Board on an equal basis. Practically these three, while functioning independently of each other in the executive part of their work, must operate in harmony and be in complete sympathy; with the paramount aim that the Rector have the means and equipment necessary to carry out the best ideals of education,—the real object of the Institution.

12. The scheme hereinafter outlined naturally predicates the existence of a co-ordinating agent superior to the Executive Head of the Institution, the Advisory Board, the Grounds and Buildings Committee and other standing or special committees appointed by the Trustees. Such a function should be performed, of course, by the Board of Trustees.

Conditions of Successful Operation.

13. To insure the practical success of such a plan experience has shown that it is essential that the Building Committee and its advisors—The Head of the Institution and the Technical Advisory Board—must at all times be kept in close touch with each other and, at the same time, with the state of affairs on the ground. This is best accomplished by having an executive secretary, in common, who shall act as "liaison officer" and who shall, above all, be resident in the institution or its immediate neighborhood. He should, if possible, be a man of some experience and interest in development work and, therefore, capable not only of preventing the lost motion and delays that ordinarily constitute the most serious drawbacks to any system involving advisors and consultants, but of fore-seeing, to a large extent, the problems that are sure to arise, from time to time, during the execution of even the most carefully studied program of development, so as to bring them to the attention of the Building Committee, the Head of the Institution and the Advisory Board in ample time to allow of proper consideration and decision without delaying the work in hand. Not the least important function of such a secretary is to see that nothing is planned or done by anybody without proper reference to and approval by the Building Committee of the Board of Trustees and then only after hearing the advice of the Head of the Institution and Advisory Board. In any large organization, without a watch dog, many things are likely to be done, seemingly of no importance, that involve dangerous precedents as well as serious financial consequences in the future.

14. A second important condition is that none of those composing what we might call the "Development Council"—the Building Committee of the Trustees, the Head of the Institution, the Technical Advisory Board and, perhaps, the Executive Secretary—shall, so long as they remain in this Council, accept employment of an executive nature in connection with the development work of the School. It is obviously unwise to put any member of the Council in the equivocal position of acting at the same time as advisor and executive; prosecutor and judge.

15. Lastly, there must be full and willing co-operation between all concerned. Without it such machinery as we have indicated will do nothing but hamper and delay, when it functions at all; and

there is nothing more dangerous than a safety device that doesn't work.

16. Obviously, therefore, the personnel should be selected with an eye to harmonious interest and action as well as to individual competency. Open-mindedness is as valuable as expert knowledge and personal liking and respect and is a lubricator which is very necessary for the successful operation of any such machinery as we have in mind.

VI.

The Organization Required.

Method of Procedure.

1. The formula for creating and putting into operation the system above outlined is substantially as follows:

The Board of Trustees should appoint from its own members a small Standing Committee on Grounds and Buildings, preferably three in number. The members of this Committee should be appointed individually for a term of one year, subject to re-appointment by the Board of Trustees, whose policy should be to keep the Committee an active agent.

Its function should be to watch over the physical conditions and needs of the School property and plant, both present and future; keep the Trustees advised of any conditions therein involving, or likely to involve, questions of general policy or expenditure; make recommendations thereon, incorporating therein the opinions of the Advisory Board, as hereinafter provided for, and, when so specifically authorized by the Trustees, act with executive powers in the employment of technical advisors, architects, landscape architects, engineers and others requisite to the proper planning and execution of all physical work in connection with St. Paul's School. This Committee should be responsible directly to the Board for the design, execution and maintenance of all buildings and development work in connection with the School.

2. The Board of Trustees, acting on the recommendation of this Grounds and Buildings Committee, should forthwith appoint two or more technical consultants to act as an Advisory Board.

A very good combination might consist of an architect, a landscape architect and an engineer, contingent, of course, on the possibility of securing in the case of the last two professions men of such architectural experience as would qualify them to act on what would be primarily an Architectural Board. The function of this Advisory Board should include general advice in connection with school policies, in so far as they relate to physical development of grounds and buildings; advice on specific problems in connection therewith; advice in the preparation of programs for the general development and specific improvements, additions or changes, and in the selection of executives, architects, landscape architects, engineers and other executives; criticising and recommending for adoption or rejection each submission of plans, designs and suggestions in any form involving the buildings, grounds or embellishments thereon, including gifts and memorials.

3. On the nomination of the Grounds and Buildings Committee and with the approval of the Advisory Board the Trustees should appoint an Executive Secretary, who should be a resident of the School or immediate neighborhood, to act in common for the Development Committee and the Advisory Board, in connection with the development of the property.

In addition to the ordinary duties of a recorder this Secretary should:

A. Act as custodian of plans, surveys, reports, and other data relative to the physical aspect of the School and prospective changes therein, and supply information relative thereto.

B. Keep the Advisory Board and the Grounds and Buildings Committee constantly advised of the actual situation on the property, notifying them in advance of any questions that are likely to arise calling for their action, and, on the other hand, communicate all decisions and instructions of the Advisory Board and the Grounds and Buildings Committee to the Executives or others employed in the execution of programs approved by the Trustees.

4. The Board of Trustees should then pass a resolution to the effect that on and after the appointment of the Grounds and Buildings Committee and the Advisory Board, no construction or development work, outside of ordinary maintenance and repairs, is to be done on the School property without the recommendation of the

Grounds and Buildings Committee and formal approval, in writing, by the Trustees. Furthermore, it should be provided that no action on such matters is to be taken by the Grounds and Buildings Committee without the advice of the Advisory Board, who shall have the right and opportunity to present and file with them their opinions, in writing, and that where the Grounds and Buildings Committee, after receiving and considering such opinions, decide to go counter to the advice contained therein, that fact shall be noted in the minutes of the Grounds and Buildings Committee recording such decision and the written opinion of the Advisory Board shall be presented to the Trustees, together with the Grounds and Buildings Committee's record of its action thereon.

APPENDIX "A."

Notes on Existing Conditions.

While we do not propose to make any detailed scheme of readjustment and future development at this present time, there are certain conditions and possibilities with reference to both land and buildings that should be noted for discussion and as a basis for subsequent constructive planning.

A. Central or Teaching Group.

An examination of the two diagrams (Nos. 1 and 2), showing present distribution of functions and present condition of buildings, would suggest that a space should be reserved for the central series of teaching buildings, approximately as indicated by the letter "A" on Diagram No. 6, showing a tentative allotment of areas. This space includes all of the present "teaching" buildings and includes only one "permanent" building devoted to residence, the old "Lower School." A rather superficial examination of this one building indicates that it could probably be altered over, when the time comes for it, into a reasonably satisfactory classroom building, if so desired.

With or without such a change there is room in this central area for great expansion of the teaching space without forcing the residential buildings to an unreasonable distance. The boundaries of this space, and the best locations for such expansion within it, of course, require much more detailed study before any new buildings are actually started.

The pond fixes most of the boundary of the central district on the north and west, connection with the region of the "New Upper" being provided by the foot-bridge. The road bridge and old road passing south of the"upper" are assumed to be temporary, as they are not needed for traffic, and as their ultimate removal, though somewhat costly, would greatly improve the appearance and usefulness of the pond.

To the southwest the boundary of the central group is drawn just beyond the existing laboratory because further extension in that direction would disperse the group unduly. There is a large space for expansion of laboratories and associated facilities to the north within the outline shown.

On the east and southeast it is much more difficult to determine sensible boundaries for the area to be reserved for possible expansion of the central group. Subject to revision, after full discussion of this preliminary report with the School authorities, our present opinion is that the entire space eastward to the junction of the Hopkinton Road and Pleasant Street ought to be so reserved, rather than start a residential group immediately east of the Chapel, as hitherto proposed by the Architectural Board. It seems to us that the uncertainties of the future as to possible enlargement of the Chapel accommodations, as to a possible large assembly hall for other than religious purposes and possible expansion of the other functions of the central group, would make the building of a residential quadrangle on the site suggested by the Architectural Board more dangerous than is justified by the advantage of such compact grouping. And this, especially since there is so large an area available for residential buildings within a radius of 1,000 feet, the distance that now separates the "New Upper" from the old Chapel, which may be taken as the approximate focus of the central group.

B. Southern Margin of the Central or Teaching Group.

Immediately south of the main buildings of the central group is an area sloping down to the meadow (K), occupied only by the Rectory. Because of the views from the main buildings, southward over the meadow, views which can be enormously improved and developed by a little judicious cutting of encumbering growths, we believe this space ought to be wholly withdrawn from use for further buildings, unless indeed at some very remote period the central group should grow so as to occupy all the available sites within the area marked A, when its southern frontage might be extended into area B.

C. The "School" Hill.

Here is an ample area for one or more residential groups wholly within 1,000 feet of the focus of the Central Group. The "School" building has been condemned as inconvenient, dangerous and unfit for remodelling; and the first large item in any general building program is undoubtedly to provide new accommodations for its replacement. A new residential group can probably be so designed for Area C that it can be completed in whole or in part before demolishing the old "School" or the temporary wooden buildings there.

D. "Old Upper" Region.

West of the central meadow there is a site sufficient for another residential group, but as its utilization would probably involve the demolition, or at least the radical alteration, of the two existing buildings, it is one that should probably be held in reserve for years to come.

E. Southwest Pond Site.

The wooded hill immediately southwest of the Library offers an admirable site for a picturesque residential group. Its western limit is fixed by the line for a road which should be provided to give access from the new Dumbarton Road both to this site and to the "New Upper."

F. The "New Upper" Region.

While there is a large amount of land around the "New Upper" which is suitable for building and is fairly close to the Central Group, it is doubtful whether another full-sized residential unit with independent kitchen facilities could be fitted in here without crowding, except by going considerably beyond the 1,000 foot radius. It seems probable that the space north and northeast of the "New Upper" should be used in part for masters' houses and in part for subsidiary "house units," forming one large residential group with the "New Upper," and utilizing the kitchen plant of the latter, although probably having a supplementary dining room since the present dining room is seriously overcrowded.

G. Northwest Pond Sites.

It is possible by adopting a very rambling and extended plan to provide for a residential group among the pines northeast of the pond and below the Infirmary and ultimately, if needed, another such group beyond the 1,000 foot radius.

H. Northeast Hill Site.

There is an available site for at least one residential group on the hillside northeast of the junction of Hopkinton Road and Pleasant

Street, but its development would be somewhat difficult and expensive on account of the grades and the ledges, and would involve the demolition of existing wooden houses now providing for a considerable number of boys. Therefore its use for a residential group is probably remote.

I. Athletic Fields.

The existing athletic fields can be extended northerly, by some expense for grading, without occupying space within the 1,000 foot circle, and this space should be reserved for such extension.

J. Supplementary Athletic Field.

Although requiring somewhat extensive grading, the area marked "J" seems to offer the best opportunity west of the Central Group for future addition to the athletic fields and ought to be reserved for that purpose.

K. Central Meadow.

Both because its low and ill-drained character makes it unsuitable for building and because a permanent wide space of open land directly south of the Central Group is of the utmost aesthetic advantage as giving a sense of spaciousness to the whole composition, the Central Meadow ought to be kept forever as an open space. And when we say open, we mean not only free from buildings, but freer than at present from encumbering bushy growth and numerous low branched trees. The landscape value of this space and of its proper treatment was urged by Mr. Olmstead years ago, and what he said then is in substance applicable today. We, therefore, append a copy of his report of July 27, 1899.

L. Power House and certain other utilities.

The location of the present power house, with its chimney and its coal dumps, is admittedly unfortunate in appearance, and it occupies space which might otherwise be advantageously used for future extensions of the central buildings for instruction. On the other hand, it is central and is connected with many of the buildings by heating conduits in which a considerable investment has been made. Unless radical changes have been made, of which we are not informed, since the date of Messrs. Hollis French & Allan Hubbard's report on the heating system, under date of April 7, 1914, the latter is far from efficient. Looking forward to a considerable amount of building, which will necessarily be widely scattered, we believe that the whole problem of a future heating plant ought to be carefully restudied. In at least one university, now under reconstruction, instead of enlarging the existing boiler house and providing long heating mains radiating to all buildings at a large cost for proper construction and with relatively large losses of heat in transmission, it has been found expedient to install a producer gas plant and at small expense pipe the gas to local group heating plants in the basements of the buildings, a far more flexible system and one which would make it feasible to remove the main plant and its coal storage to a less conspicuous and central position, as, for example, south of the new Dumbarton Road beyond the Friendly Hall. Other service facilities might well be transferred to the same locality.

APPENDIX "B."

Report on Condition of Existing Classrooms.

October 17, 1922.

Mr. Grosvenor Atterbury, Architect,
139 East 53rd Street,
New York.

Dear Sir:

I beg to report as follows regarding the buildings at St. Paul's School, Concord, N. H., which we visited Friday, October 13, 1922:

The School House.

Third Floor—Rooms 1 to 8 inclusive.

Approximate area and cubeage.

No. 1	21 x 27	567 sq. ft.	6,804 cu. ft.	23 pupils
No. 2	20 x 20	400 sq. ft.	4,800 cu. ft.	20 pupils
No. 3	25 x 27	675 sq. ft.	8,100 cu. ft.	30 pupils
No. 4	20 x 30	600 sq. ft.	7,200 cu. ft.	28 pupils
No. 5	21 x 27	567 sq. ft.	6,804 cu. ft.	28 pupils
No. 6	20 x 21	420 sq. ft.	5,040 cu. ft.	24 pupils
No. 7	22 x 27	594 sq. ft.	7,128 cu. ft.	25 pupils
No. 8	22 x 27	594 sq. ft.	7,128 cu. ft.	20 pupils

Height about 12.0 in clear.

Lighting: In each room the window area is only about one-half of standard requirements.

Heating and Ventilation: Heating is by direct radiation only and there is no ventilation provided except by windows. There should be air supply either by indirect radiation or by properly arranged windows, and there should be positive exhaust for vitiated air.

Area and Cubeage: These are ample for the number of pupils. Rooms 1, 3 and 5 are 27.0 wide from outer wall to corridor wall and rooms 2, 4 and 6 are about 20.0; clear height is about 12.0. Even with proper window area the useable width of room should not exceed 22.0.

Seating: In all rooms but one the seating is improperly placed with reference to windows.

Fire Hazard: These rooms are on the third floor of a non-fireproof building. The corridor is narrow and the doors swing in. There is an open iron staircase at the front and a narrow wood staircase with winders at the rear. There are no fire doors and there are no outside fire escapes.

General: Modern standards are not complied with, but useable space is capable of providing about 50 more sittings.

Study Hall.

This room is on first floor, is about 54 x 75 and about 20.0 high. It is now seated with 170 desks, adult size.

Lighting, heating and ventilation could be classed as fair, although air supply is by windows only.

Area and Cubeage: These are sufficient to provide about 50 more desks. I was informed that the proportion of desks to pupils (exclusive of Lower School) is 170 desks to 300 pupils. Should the number of desks be increased and this proportion remain, the actual capacity would be increased accordingly.

Fire Hazard: Room is on first floor and two exits are provided at each end of room.

The Annex.

First Floor—Rooms 12, 13, 14.

Approximate area and cubeage.

No. 12	18 x 24	432 sq. ft.	4,320 cu. ft.	20 pupils
No. 13	20 x 25	500 sq. ft.	5,000 cu. ft.	23 pupils
No. 14	25 x 30	750 sq. ft.	7,500 cu. ft.	30 pupils

Height about 10.0 in clear.

Lighting: This is below standard requirements; rooms 12 and 14 very poor.

Heating and Ventilation: Direct radiation only, no ventilation except windows.

Area and Cubeage: Ample for number of pupils, although ceiling is too low.

Seating: For No. 14, improperly placed with reference to windows.

Fire Hazard: These rooms are upon first floor. Doors swing the wrong way.

Second Floor—Rooms 15, 16, 17.

Area, Cubeage, etc.: Same as corresponding rooms on first floor. Height about 9.6.

Lighting: Below standard, rooms 15 and 17 very poor.

Heating, Ventilation, Seating: Same remarks as for first floor rooms.

Fire Hazard: These rooms are upon second floor of a non-fire-proof building; doors swing in; stairs (?).

Third Floor—Rooms 10, 11.

Area, Cubeage, Lighting, Seating: Satisfactory.

Heating and Ventilation: Same remarks as for first floor rooms.

Fire Hazard: Third floor of a non-fire-proof building; doors swing in; only one wood staircase, no fire-escapes.

Basement—Room No. 9.

Same remarks as for first floor rooms, but the lighting is especially bad.

General: Modern standards are not complied with in "**The Annex,**" and some of the rooms are absolutely unfit for use.

The Lower School.

This building complies with practically every modern standard. It was evidently designed with a view to future extension, by adding four class rooms at the rear corners, corresponding to those in front.

Laboratory Building.

This does not comply with modern requirements, especially as to lighting, ventilation and sanitation.

Yours truly,

WILSON POTTER.

WP/CH.

APPENDIX "C."

Notes on the General Problem; Theoretical Systems of Growth, and Excerpts from Preliminary Report Discussed in 1922.

While this Report makes no pretense at presenting a definite, concrete solution of the development problem at St. Paul's School, it was found necessary, at the very start, in order to determine a proper "Method of Approach," to analyze the situation carefully.

As parts of this preliminary study and discussion might be of some use to any one who, in the future, might be asked to solve the concrete problem by formulating a general plan, they are included in this section of the Appendix.

In this connection it might be well to explain the general "Method of Approach" which we conceived to be the only practical way of making any progress under the conditions given us.

1. Certain things with respect to the architectural aspects of the problem are primarily to be considered.

First, the relation of the physical plan to the organization which it now accommodates.

Second, its relation to the future growth and changes of the school.

Third, its relation to the natural environment.

Fourth, the influence of external conditions.

And, by reason of the extent to which the physical development of St. Paul's School has progressed without any general plan and, to a large extent, in disregard of its natural setting, all these aspects of the problem are extraordinarily difficult. Unfortunately, the "inclined tree" can not be bent like the twig. The general plan can not be radically changed. The good structures can not very well be moved and even the bad ones can only be replaced from time to time as new ones become possible.

No radical solution of the difficulty, therefore, seems possible.

The only hopeful approach to our problem appears to be the setting up of an ideal solution; a comparison with it of the existing institution, a plan resulting from such comparison and, finally, a program looking to a gradual evolution toward the end so determined.

2. The question of the existing structures is, of course, the most puzzling element in the problem. Curiously enough, although they appear to have been a more or less natural expression of the development of the School organization, from the old days of Dr. Shattuck's house through years of gradually enlarging size and scope and, therefore, might naturally be supposed to express pretty accurately in their plan and accommodations the functions of the school, this is by no means the case. One of the baffling things to a stranger attempting to grasp the principles of the organization of St. Paul's is the complete lack of relation between the physical and theoretical organism.

Other things being equal, an organization will function more successfully when its physical habitat responds, substantially, to its theoretical structure.

It is, therefore, worth while to study the existing form of the School organization in comparison with the existing physical plant. And to do this intelligently we should have clearly in mind the theoretical plan and system of growth in each case.

A glance at the following diagrams may help to visualize the problem.

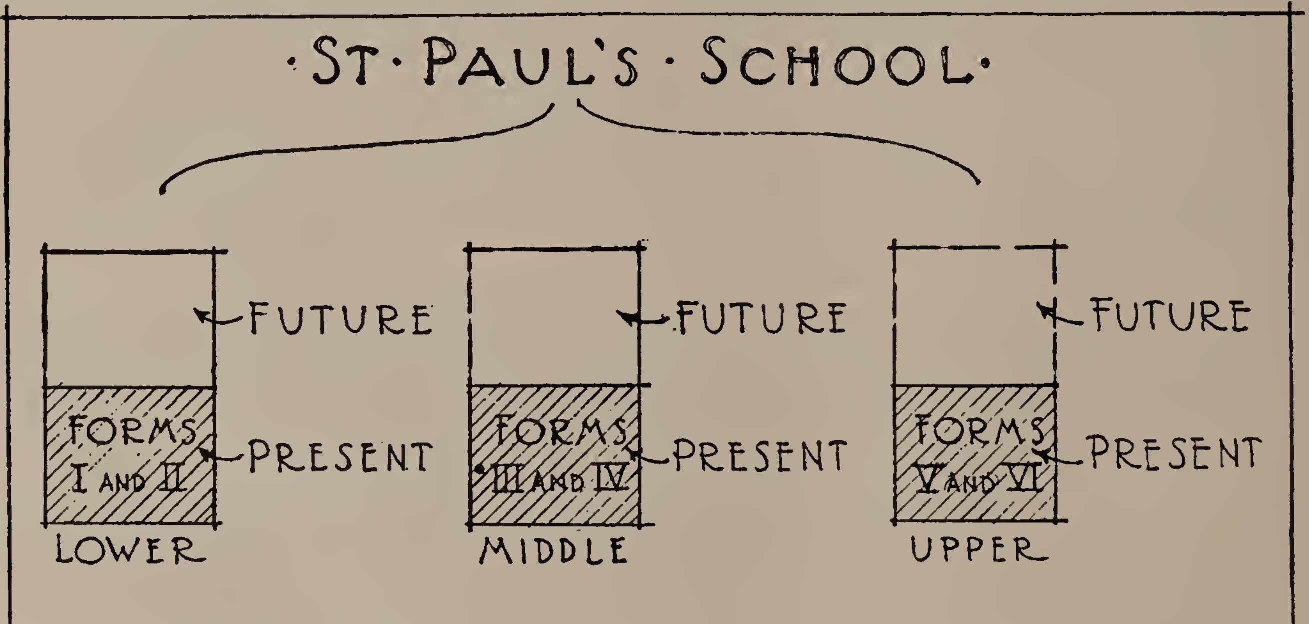
In doing so let it be understood that, for the present, we are speaking in broad, general terms and on the assumption that individual, practical difficulties can be overcome or negotiated, or the general plan modified to meet them during the development of the plan, previous to its final adoption. In short, that the School can always count upon adequate support—both financial and moral—

to insure the execution of any scheme within reason that appeals to the great majority of its trustees, alumni and friends as one that either now or in the future will more than repay its cost in the increased welfare and usefulness of St. Paul's School.

"Experts"—like "High-brows"—have been defined as people who tell you something you already know in language you don't understand. But, even at the risk of being thus classified, we call the reader's attention to the accompanying diagrams—Nos. 7, 8, 9, 10, 11, 12, 13 and 14.

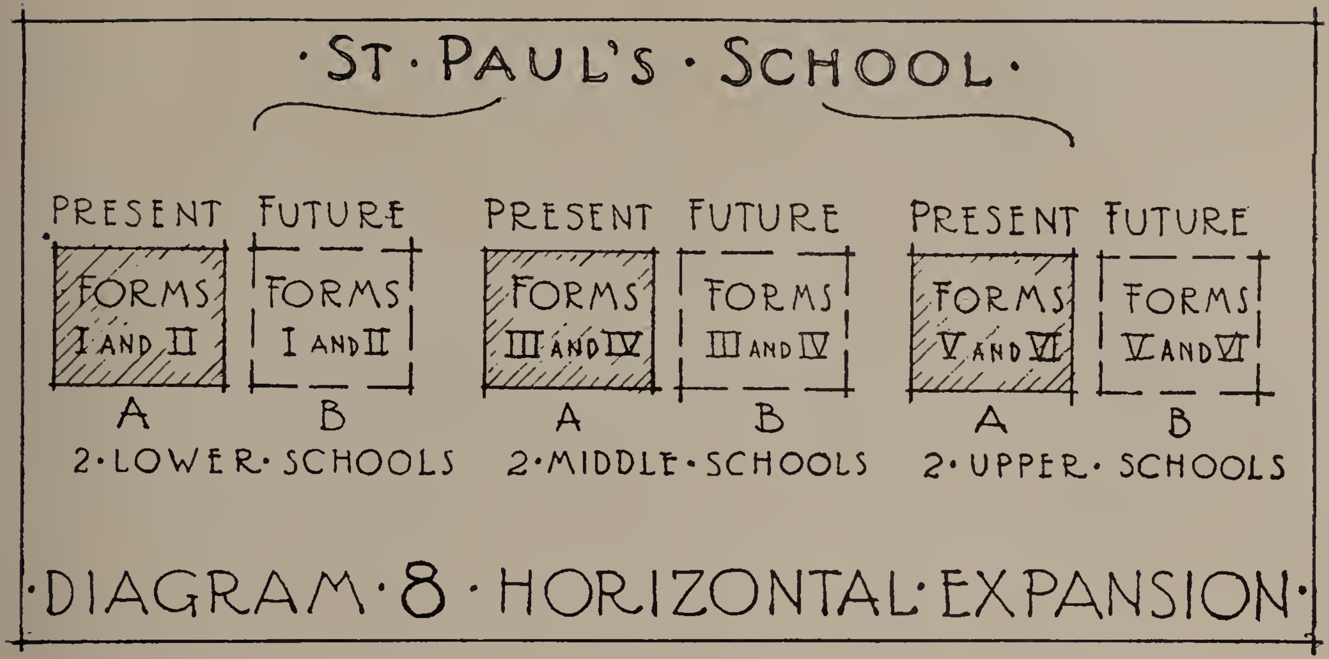
As a result of our preliminary survey we concluded that the most promising way to attack our problem was to begin by setting up an "ideal" or theoretical solution—meaning one that would ignore any practical difficulties, past, present or future, not essentially inherent in the problem itself, and most of these diagrams are of that nature.

Diagrams Nos. 7, 8 and 9 represent certain possibilities in the matter of school organization—limited by what we have gathered to be the accepted definition of the organization at St. Paul's. They are if you please, charts of its rudimentary nervous system.



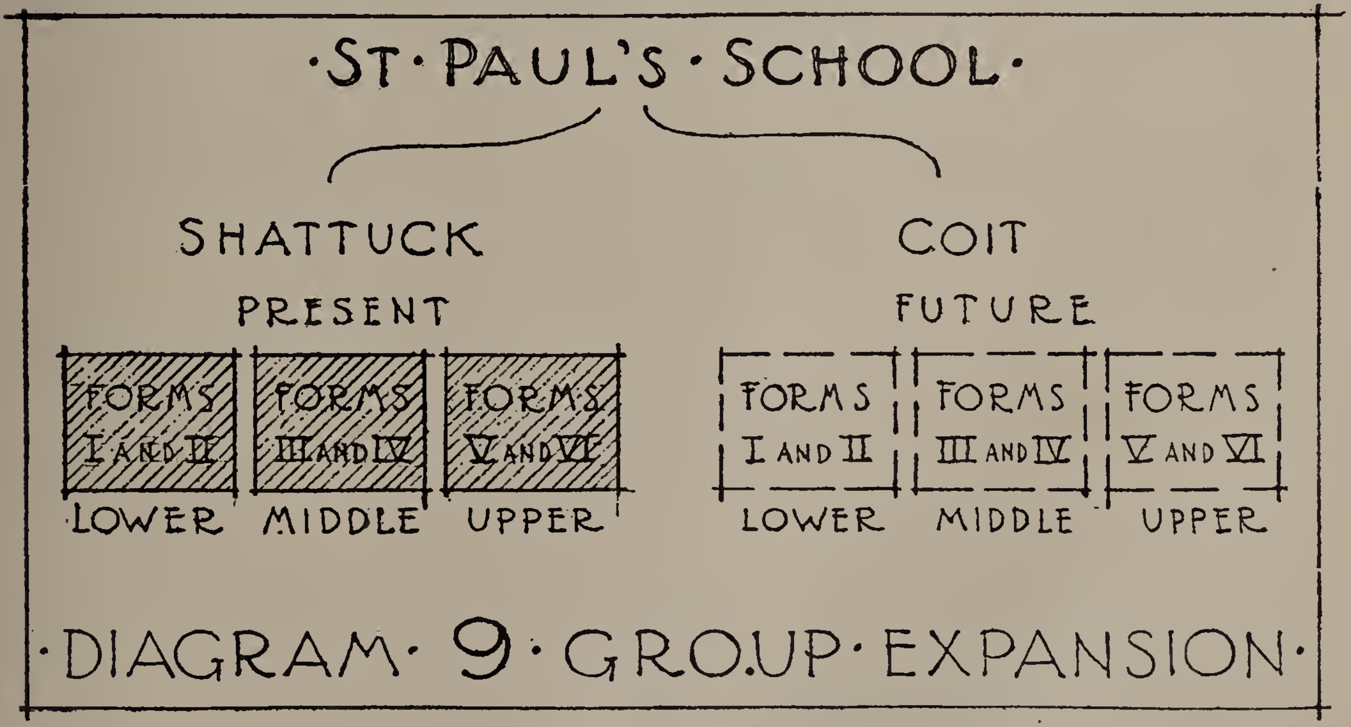
·DIAGRAM·7·VERTICAL·EXPANSION·

The above Diagram, No. 7, indicates what we will call vertical expansion—where the existing system remains while the individual units are increased in size. Instead of 75 boys in each form we may have 150.



·DIAGRAM·8·HORIZONTAL·EXPANSION·

The above Diagram, No. 8, on the other hand, shows a horizontal expansion in which the number in each unit, or form, remains substantially as it is but additional units, or forms, are created of similar size.

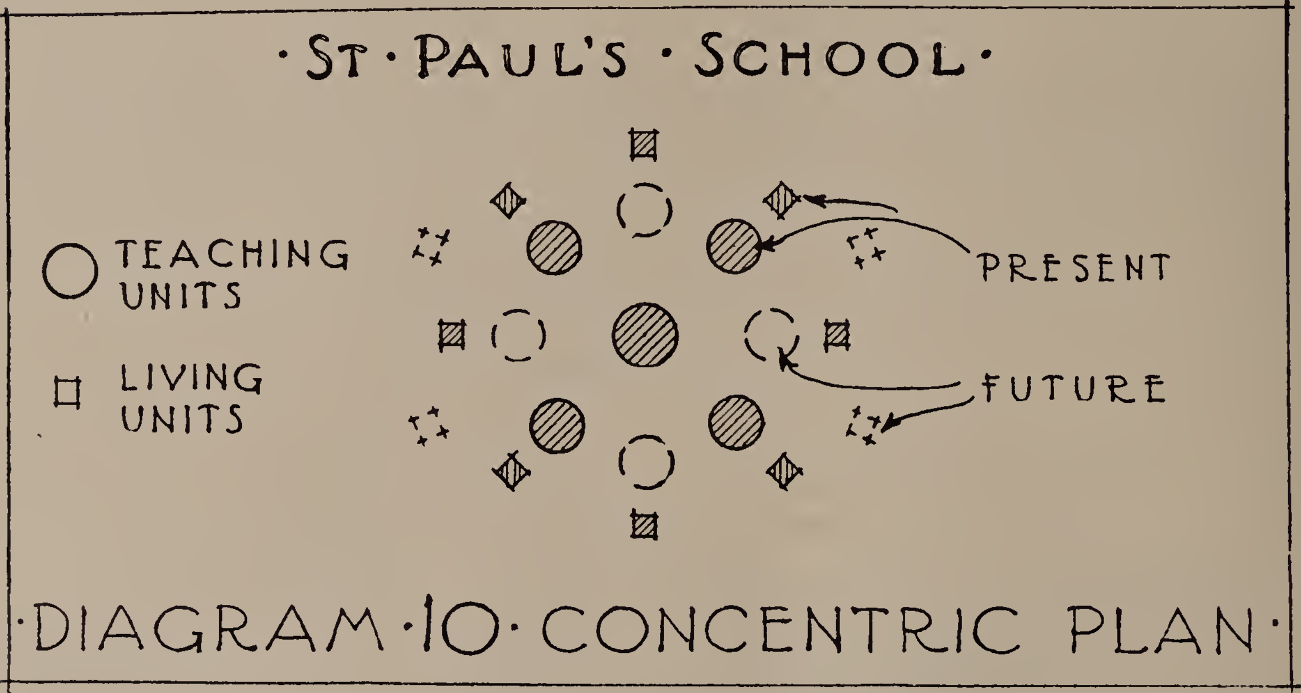


·DIAGRAM·9·GROUP·EXPANSION·

In Diagram No. 9, above, the increase in numbers is made possible by replication of the entire original system, all the component units remaining their original size. This would result in an organization similar to that of many of the English Schools and Universities, and we should have, for example, the existing school, which might be called "Shattuck," parallelled by a second called "Coit," the two constituting the greater St. Paul's School.

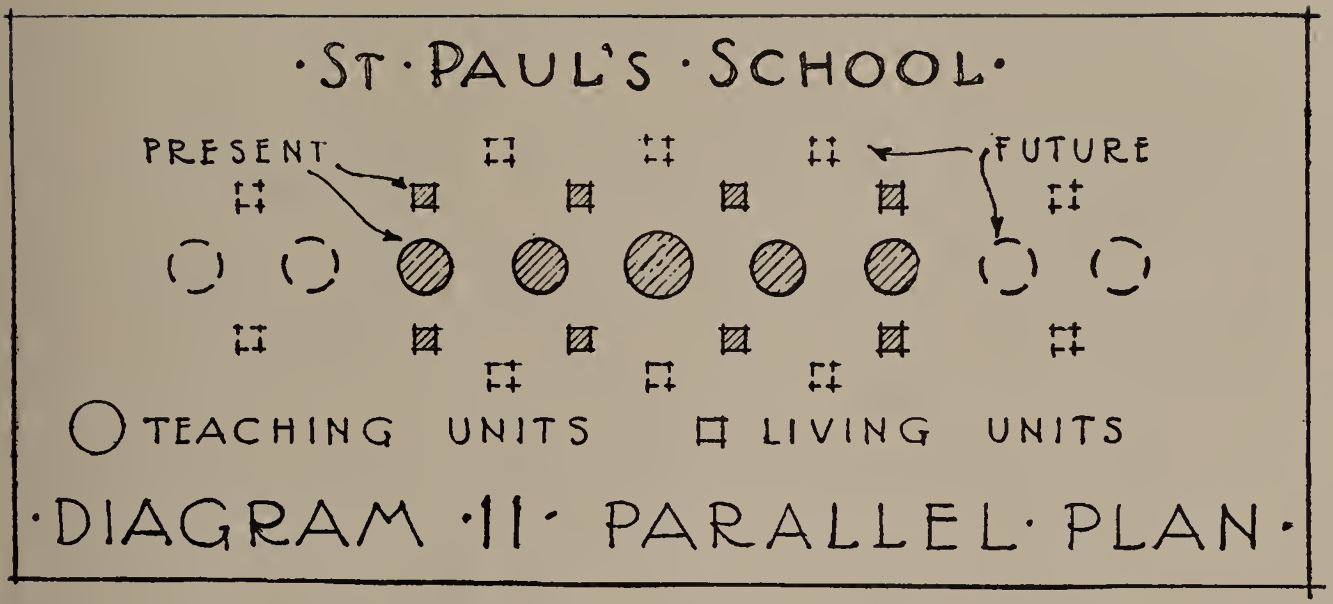
* * * * *

Diagrams Nos. 10, 11, 12 and 13, on the other hand, have to do with the physical development of a school—its anatomy. And if we were not afraid of coming under the definition of a "high-brow," above quoted, we would add that the correlation of the anatomical and nervous systems is a matter of considerable importance to the proper functioning of the entire body, which is St. Paul's School.



·DIAGRAM·10· CONCENTRIC PLAN·

In Diagram No. 10, above, the two main types of buildings—teaching and living—are arranged concentrically—the living units being distributed in a circular grouping around centralized units designed for teaching purposes. In this case it is to be noted that the expansion of the teaching units is limited to the area contained within the surrounding living units and that to allow for any large growth it might be necessary to leave an inconveniently great distance between the centralized group of teaching units and the distributed housing units.



In Diagram No. 11, above, however, the development occurs in parallel lines allowing for an expansion limited only by the site and yet permitting, at all stages, any desired relation or distance between the two types of buildings.

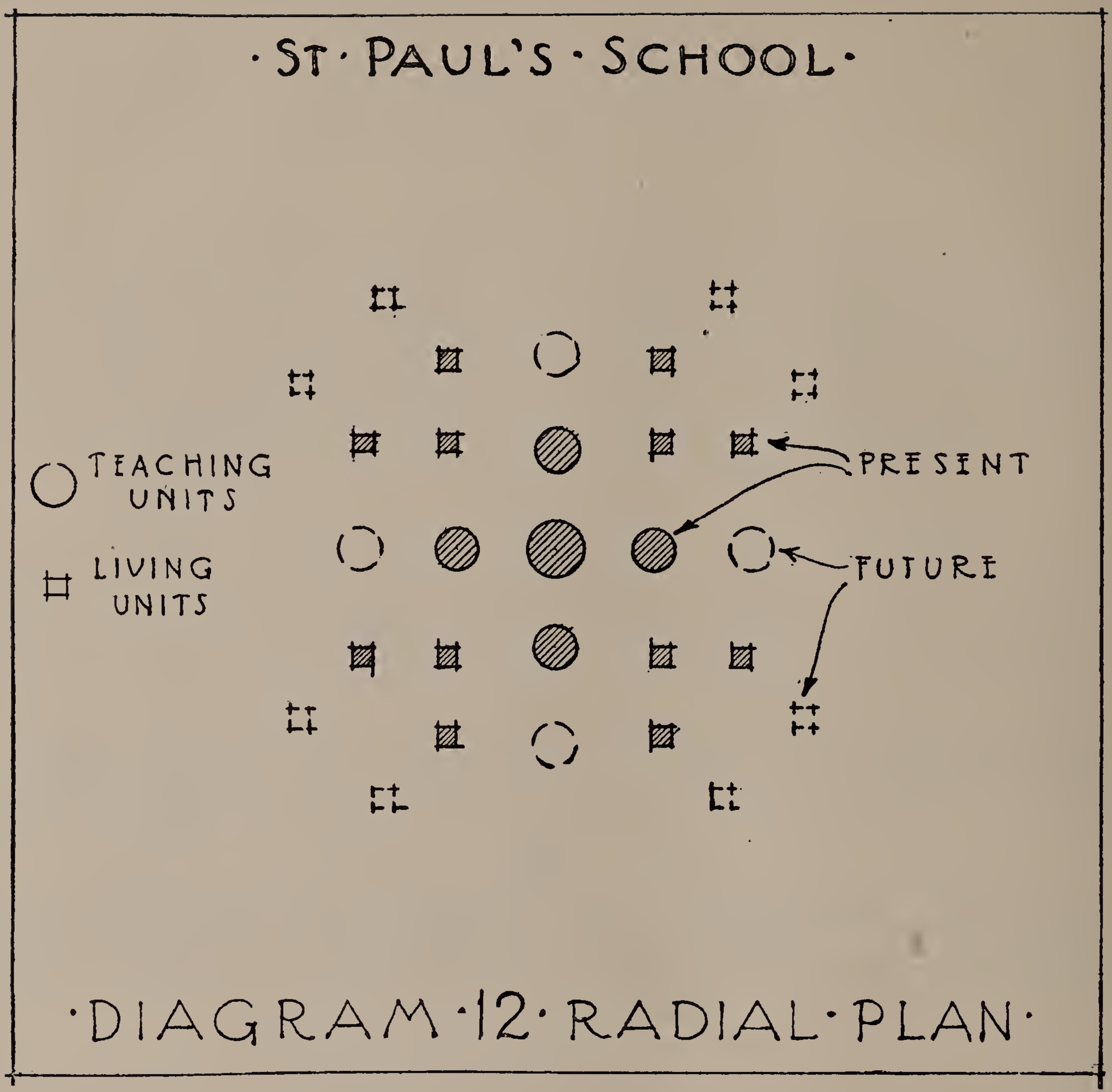
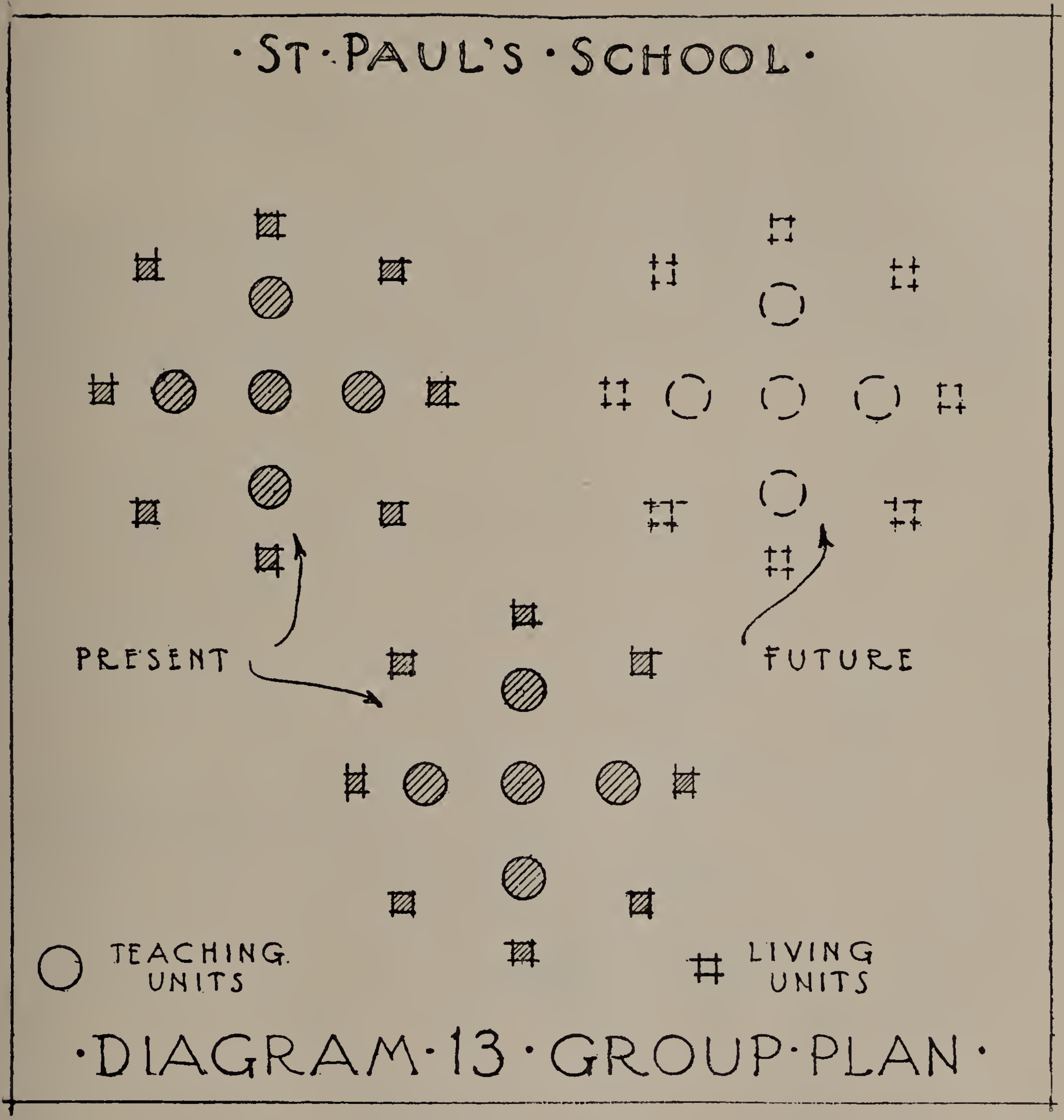


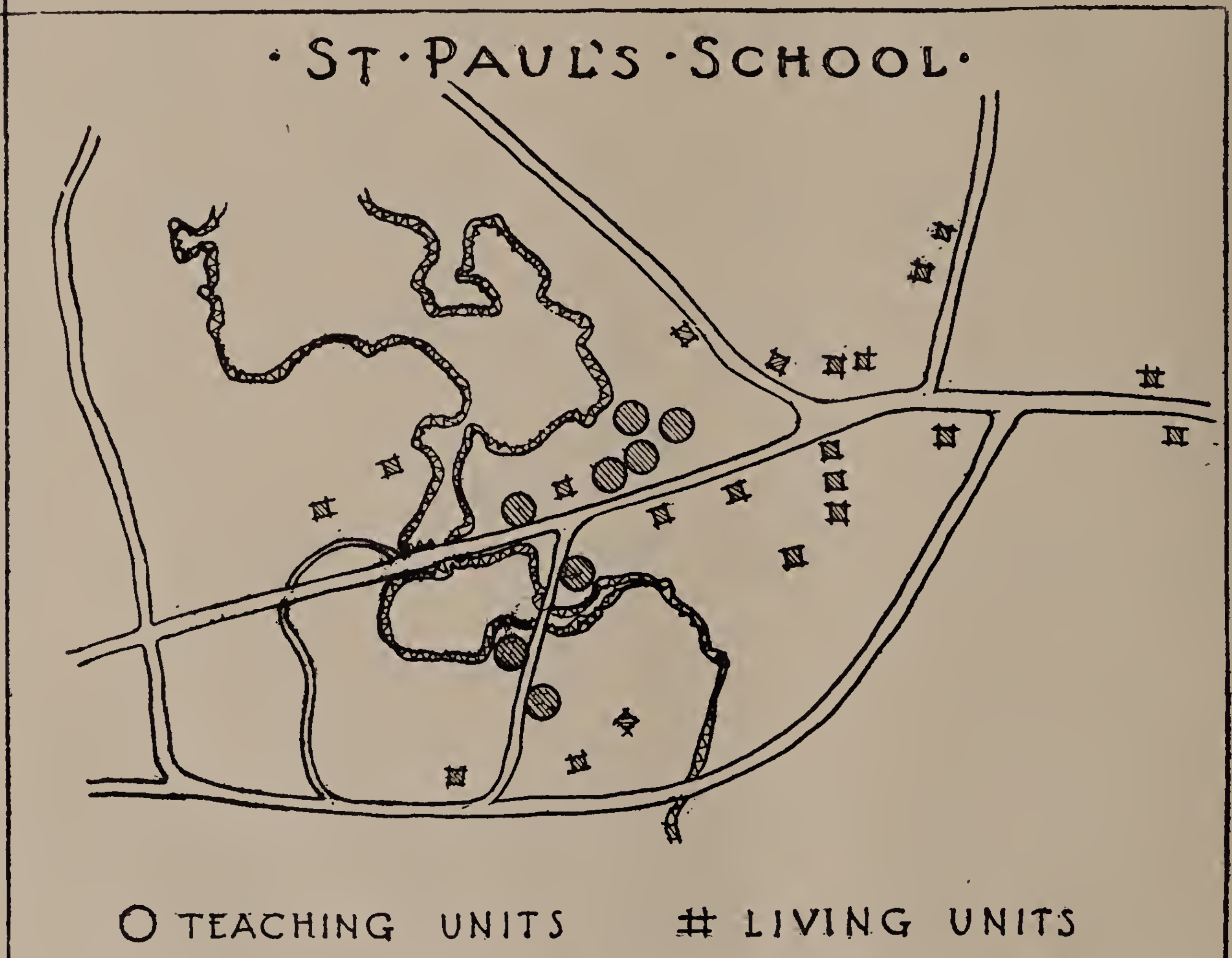
Diagram No. 12, above, indicates what may be called the radial type of plan—a development of the concentric plan designed to obviate the difficulty mentioned in connection with No. 10. In No. 12 the surrounding living units are separated into groups leaving spaces between for future extensions of the central nucleus of building for instructional purposes.



In Diagram No. 13, above, the concentric plan of Diagram No. 10 is combined with the principle of growth expansion (see Diagram No. 9). Each unit is a complete school in itself and growth is accomplished by additional groups.

While none of these diagrams are intended to have direct or literal applications to the situation at St. Paul's, they are designed to help in our attempt to visualize the general character and scope of our problem as well as certain basic principles which any solution must more or less clearly recognize.

All of the foregoing are, of course, theoretical diagrams from which we may derive the norm, or basis, of what we might call the ideal solution and are, of course, subject to modifications, either for the purpose of more satisfactorily expressing the functions to be accommodated or to properly meet the physical conditions of the site.



·DIAGRAM·14· LOCATION·OF· ·EXISTING·FUNCTIONS·

The last diagram, No. 14, attempts, in the roughest kind of way, to show in similar characterizations the actual and relative location and the distribution of actual functions of the buildings at St. Paul's as they exist today.

It is from a comparative study of such theoretical possibilities as would lead to an ideal solution and of the practical conditions with which the School is confronted that we expect to see developed the plan towards which the program of development of the School, both as to its anatomy and nervous systems, may be wisely directed.

APPENDIX "D."

Reports of Olmsted Brothers (Sept., 1898, and July, 1899) on the Development of the Property.

10th September, 1898.

Francis H. Appleton, Esq., President of the
Alumni Association of St. Paul's School, Concord, N. H.

Dear Sir:

Having made an examination of the grounds of St. Paul's School with you, and having conferred with some of the school authorities, we beg to submit the following statement of the ideas suggested to us by the visit:

Like most important places of learning, St. Paul's School has taken its present form as a result of unpremeditated growth. In its early days it was neither expected nor desired that it should become so large an institution as it now is. When the need of expansion or change has arisen from time to time, it has been met in such a way as the circumstances of each case indicated as best, without the adoption of any general plan to guard against future complications. This was partly because it was difficult, if not impossible, to forecast the future of the school, and partly because of what we may call a constitutional disability that is common to the class of schools and colleges to which St. Paul's belongs. Such schools and colleges have grown from small beginnings in a healthy, natural fashion, feeling their way, step by step; conservative of the pleasant traditions, customs and associations that are a part of their history, and there is associated with this pleasant mental atmosphere a natural disinclination to anticipate great changes and so forestall their embarrassments. The essentials of a good school are in its administration, and if only its buildings and grounds be fairly good, the tendency is almost inevitable to concentrate the attention of those who direct the school upon the maintenance and perfection of its standard of administration and to avoid changes or contemplation of changes in the buildings and grounds until the need becomes pressing.

In this growth along the line of least resistance something like a consistent plan in placing the buildings has, nevertheless, been followed. They are placed along on either side of the highway like so many independent dwelling houses or public buildings, using the highway as a central feature to group them into a unit, just as it groups a series of dwellings into a village. The New England village at its best is delightful, and as a basis for an arrangement of school buildings might serve admirably. But as no plan of this sort has been consciously followed at St. Paul's, it is natural that the type has been widely departed from in several ways. A large part of the buildings are of a size and style quite out of harmony with the village idea. This is so obvious in the case of the "School," that in placing it an attempt seems to have been made to secure a more dignified effect by setting it back some distance from the road, so that it forms, with the masters' houses and the infirmary a sort of quadrangle. The form of the quadrangle is so irregular and incomplete, however, that what might be a good effect is lost.

Moreover, the ground upon the southerly side of the road falls away so rapidly into the valley as to be unavailable for building, again interrupting the unconscious plan; and to the westward of the present buildings comes the pond on either side of the road effectively blocking continuous growth in that direction. To place new buildings along the road beyond the pond would be to remove them inconveniently from the others, leaving such a gap, too, as to break up the sense of continuity and neighborliness which is the charm of the village street.

If the ideal of the village street cannot be successfully followed out, what ideal can be adopted which will bring the present buildings and new ones that must be erected by-and-by into effective relation one with another, so as to produce that feeling of satisfaction which comes from buildings well arranged, whether by chance or by design? Most good groupings of buildings, excepting those to be seen from afar, are formed about some central open space, be it long and narrow like a street or canal, or be it broad like a quadrangle or a lawn. To any one with an eye for the picturesque, the pond at St. Paul's at once suggests itself as such a central feature. The pond is very charming in itself and nothing can be more beautiful used in this way than water, whether in such an informal treatment or architecturally; but we are so sure that in this case the inconvenience of separating the buildings from one another by a considerable body of water would be unsurmountable, and so few of the existing buildings could be made to relate well to such a scheme that we must reject it at once. Unquestionably, more might be made of the pond than has been; watchful cutting and encouragement would improve the beauty of its shore-growth, while minor buildings yet to be erected might make a secondary front upon it; but as a central feature it is decidedly unpractical.

On considering the location of the principal buildings, the School, the Chapel, the Gymnasium, the Lower School and the Upper School, it will be found that all are near the edge of the valley which carries the overflow of the pond, and that all except the School face towards the valley. This arrangement is not very obvious because the strongly marked line of the highway, the various subordinate buildings and the masses of trees so withdraw the attention from the form of the valley and from the relation of the buildings to it as to obscure the arrangement; but it exists, and in it lies the possibility of bringing the Upper School into obvious relation with the other buildings, from which it is now absolutely isolated, and of adding new buildings in such a way as to be parts of a single whole instead of being so many separate objects merely tied together by a string of roadway. What is needed to develop this latent effect is, first, the discreet but courageous cutting of trees which block the little valley, leaving not a bare field, but a tree-furnished meadow open enough to give ready play to views from one side to the other; and, second, the gradual removal of such secondary wooden buildings as do not harmonize with the scheme. If the next large building is placed between the Upper School and the dam, facing across the valley toward the school, its situation would be convenient and it would help to tie all the buildings together round the valley as a center. Down the valley lies the athletic field, of which a view could be obtained by a little tree-cutting. The merest glimpse of a sunny field, with a corner of the cricket house beyond the trees, would be enough to suggest that play belongs to the life of the school and is not a thing apart and isolated.

Through this valley flows a stream. Its banks are often beautiful, and the flow is steady and ample; a foot or so in depth, yet no one walks along its banks, nor do the boys get from it the fun and wet feet that such a stream might be expected to provide. The reason is obvious: the sewage of the school is turned directly into the brook. It is called by the boys "the Sewer," and together with its banks and the meadow and woods through which it flows, it has come to be regarded as a sort of "back premises," to be neglected and degraded. It is painfully suggestive of a condition of things and a frame of mind which are too common in our country, but of which we are not proud and which, it is needless to point out, are not characteristic of a high state of civilization. St. Paul's School ought not, however unconsciously, to give encouragement to that frame of mind which contents itself with a well-kept entrance and a slovenly back yard. It is said by competent authority that the present sewage arrangements are not unsanitary, but there are other things to be considered in a school besides the physical health of the boys. There would be no serious difficulty in carrying the sewage further down the stream, and so filtering it before it is discharged as to render it quite inoffensive.

If the stream should be so treated and the valley so opened up and so gradually made the center of the group of buildings, we are confident that the School will become a pleasanter place in which to live and study than if haphazard growth continues along the lines of the existing roads.

Respectfully submitted,

(Signed) OLMSTED BROTHERS.

Per H. B.

July 27, 1899.

Gen. Francis H. Appleton, President,

Alumni Association, St. Paul's School, Boston, Mass.

Dear Sir:—

In accordance with the request which you made us last autumn to supplement our first report upon the grounds of St. Paul's School with a more detailed discussion of plantations and the rearrangement of buildings, we submit herewith our supplementary report. We have delayed the presentation of this report partly on account of pressing work on hand, and partly because we wished to view the grounds again when the plantations were at their best in midsummer.

We have lately sent one of our assistants to the School to complete our notes, and we are now able to consider the whole matter in detail. We will first consider the plantations about the buildings and we will note changes which seem desirable at certain points. We will then take up the problem of the treatment of the meadow and the location of future buildings upon its borders.

The Plantations.

The first impression that one has of the plantations about the St. Paul's School buildings is that the trees are many and fine, but the minor plantations of shrubs and vines meagre and poorly massed. If there is any criticism of the trees it is that they are too crowded. For the sake of views, it would be desirable to make a considerable reduction in the number of trees in the meadow, while at other points they need to be thinned for the sake of their own better development. It is only at occasional points that we have noted a deficiency in tree growth. The trees themselves seem to be thriving, and the prevalence of pine about the ponds, and elm and maple about the meadow and "Lower Grounds" is a fortunate circumstance and one that should be made a motive in future plantations.

We notice, however, that in one or two instances trees have been set out which do not harmonize with the greater bodies of woodland about them. We remember in particular, the young spruce trees which have recently been planted in the carriage turn opposite the School. They strike a note which has no response in the plantations about them, and we should advise their removal. As regards thinning, some attention should be given to the elms which border the main thoroughfare. A certain number of them need removal for the sake of relieving the remainder and to allow light to reach the grass and shrub plantations.

The woodland districts of the School grounds are in need of systematic thinning to develop the best trees, and at certain places the removal of underbrush will allow the use of parts of the forest as pleasant groves. The thinning should be accomplished gradually by the removal of sickly and unpromising trees, but particular pains should be taken to retain specimens of all sizes and habits, so that no appearance of monotony in trunk, foliage, or grouping may result. The woodland border line should be broken by occasional bays, detached clumps or individual trees. This treatment will relieve that artificial and clean-cut appearance in the woodland edge which we have noted in many instances, as, for example, behind the Upper School Building. We shall refer to one or two specific modifications in the tree plantations below.

The minor plantations of shrubs and vines, as we have already stated, are incomplete and ragged. Perhaps no one thing will accomplish a more speedy change in the first appearance of meagreness in ground plantations than the use of vines upon the long lines of white fence which mark both sides of the road within the limits of the chief group of buildings. The glaring white of wood and granite are already relieved at a few points by hedges which are properly restricted to the cottage entrances. We remember a pleasant effect produced by the use of vines upon a similar fence at the School in Framington, Conn. Enough vines are there allowed to climb upon the posts and rails to relieve the unbroken line of white and lend an air of luxuriance to oppose the dust of the street, but anything like a monotonous covering with a uniform green shroud is avoided. We believe that this sort of treatment is needed at St. Paul's. Even in the winter season the deciduous varieties of vines will contribute something to soften the lines of the dreary highway, while the evergreen varieties can be depended upon for nearly their full effect at all seasons.

A considerable amount of planting is needed about the various buildings to relieve a certain appearance of barrenness. This planting should be of a very simple character, and it should be so disposed as to appear to belong to the buildings and their approaches. It will lend interest to the grounds and it will go far to enhance that feeling of homelikeness which the use of the buildings as dormitories as well as schools suggests. We are in the habit of preparing definite plans for planting upon which the position of the beds and the name and quantity of plants to occupy them are designated. As we are limited in this report to verbal descriptions and suggestions, some statement of the general principles which should govern the disposition and massing of shrub plantations about the School may be useful as a preface to more specific notes. These principles are necessarily of limited applications, because every problem of planting calls for a solution of its own based upon such exigencies as climate, exposure, architectural style, practical uses, economy, and aesthetic uses. We shall, therefore, have in mind the present needs of St. Paul's School in the following paragraph.

Generally speaking, the plantations of shrubbery in connection with the buildings should stand closely against the walls—they should appear to buttress the walls. The outer margins of the plantations should be irregular, and the plants constituting the body of the plantation should be placed irregularly and not in rows. The taller-growing shrubs should usually be placed against the wall, and the lower varieties should find a place in the outer borders. Plantations of this sort should not be continuous, but openings should occur opposite basement windows when necessary to allow entrance for light or the handling of coal or the use of hose; openings may also occur to expose the base of a pilaster or a vigorous corner. In the neighborhood of entrances or flights of steps the plantations may be made denser and choicer varieties of plants may be selected. Flower beds should usually be confined to wall plantations, where the shrubbery may either give way to them, or the flowers may be so arranged in a narrow zone in front of the plantations as to appear to grow wild there. The simplest flowers are the best, and those of low habit, but they should be used sparingly at all times. The shrubs themselves will usually afford all the blossoms that are desirable. Vines should generally be planted at the corners of buildings or against verandas or porticoes where they will find opportunity to climb with support. Except in rare instances, they should not be allowed to mantle an entire wall in one, even clothing of verdure, but they should be cut back to reasonable limits. Plantations of shrubbery in connection with walks and drives near the buildings should stand near the walk and drive borders, and at corners they should be densest. Flowers are generally to be avoided at such places. In all cases, the planting should suit the exposure. Shade-loving plants should not be placed in the sun; sun-loving plants should not be placed in the shade—if the shade is very dense, nothing will succeed in it. Half tender plants should not be placed upon exposed corners. As regards the massing of the shrubs, they should be generally placed so near to each other that at maturity their sprays will interlock and the group should appear as one unit. Plants of widely different habit should not be placed in the same group.

We have noticed in examining the plantations about the School that the shrubs are not placed snugly against walls or walks, but they are dotted about in the open spaces and the individual generally stands out as a unit. We have also noticed that plants of widely different habit are planted near together as, for instance, cedars, dahlias and syringas. If the new plantations can be snugly massed without incongruous parts, and so disposed against building and walk as to leave the centres of the greensward unoccupied, the effect can hardly fail to be pleasing.

As regards a choice of shrubs to be used about the grounds, the first requisite is hardiness, and the other requisites are neat habit, simple foliage and quiet color. Exotics of all kinds are equally to be avoided with "golden varieties," "cut-leaved varieties," "double-flowering varieties," and the like. Plants of this kind may properly be provided for in gardens or collections, but they should stand within defined enclosures. As an example of the sort of shrubs which we would advise, we may mention:

Spiraea (Thunbergii, Van Houttei and Prunifolia).

Barberry (Common Wild and Japan).

Alder (Clethra alnifolia).

Indian Currant (Symphoricarpos vulgaris).

Snow Berry (Symphoricarpos racemosus).

Cornels (Cornus sanguinea and alternifolia).

Siberian Pea-tree (Caragana arborescens).

Forsythia (Suspensa and viridissima).

White Kerria (Rhod~~e~~otypos kerrioides).

Aralia (Aralia pentaphylla).

Lilac (Syringa vulgaris).

Privet (Ligustrum vulgaris and Ibota).

Mock Orange (Philadelphus coronarius).

Golden Currant (Ribe~~a~~s aureum).

Japan Rose (Kerria Japonica).

Azalea (Azalea amoena).

Andromeda (Andromeda floribunda).

Mountain Laurel (Kalmia latifolia).

Leucothoe (Leucothoe Catesbaei).

Bayberry (Myrica cerifera).

Japan Quince (Pyrus Japonica).

Roses (lucida, rugosa, wichuraiana, etc.)

Periwinkle (Vinca minor).

The above are only a very small part of a list of plants that might be used, but it will furnish some notion of the kind of plants which we have in mind.

For creepers, we would suggest among others:

Virginia Creeper (Ampelopsis quinquefolia).

Boston Ivy (Ampelopsis veitchii).

Hall's Honeysuckle (Lonicera hallea~~ria~~na).

Wistaria (Wistaria chinensis, etc.).

Clematis (paniculata and viorna).

Trumpet creeper (T~~a~~ecoma radicans).

Plants of the sorts named above will require very little care for maintenance, and when they have once gained a foothold, the less they are disturbed the better.

Among flowers we will name early spring kinds like crocus, snowdrop and jonquil, as they are of particular interest. We may also mention phlox, lilies-of-the-valley, violets, columbine, blue bells, cardinal flower, forget-me-not, Scotch pinks, loosestrife and asters.

We have noticed that geraniums and nasturtiums are used to a large extent about the buildings. These flowers should certainly not be allowed to usurp the place of their more attractive rivals, and we should much prefer to see them confined to the cottage gardens.

We will now consider the more important School buildings in some detail to supplement the general planting suggestions given above. The numbers before the names of the buildings refer to their plotted position as shown upon the blueprint of the School grounds in our possession.

No. 10—The Lower School.

This building is now undergoing repairs. As far as we can judge at present, its appearance will be improved by the use of vines, particularly upon the veranda and bay windows. Planting is also needed on the Chapel side to screen the laundry yard fence from view. As a usual thing, vines should not be allowed to climb upon the trunks of fine trees, as is the case near this building. In connection with the vines which we have suggested for the fences along the main highway it would be well to plant Virginia Creepers along the wall near the hay scales east of this building.

No. 26—Chapel of St. Peter and Paul.

A very happy choice was made in the creeper which covers this Chapel, but we fear that if its growth is not restricted, it will obscure so much of the details of the structure as materially to weaken its effect. We would suggest, therefore, that your gardener be provided with a photograph of the Chapel as it stands today and that he be instructed to keep the vine from spreading beyond its present limits. We should like to have the experiment tried of growing English Ivy upon the northern and eastern wall. Should it succeed in that exposure, the blank wall will be much relieved by a limited covering of it. We believe it will be advisable to omit all shrub plantations about the building and allow the greensward to extend to its walls, as is the custom with most English churches. The growth of trees between the Chapel and the Hopkinton Road is too scanty for a good background, and we would suggest the addition of a few elms upon the upper hillside near the wall in the vicinity of the east road entrance. Shrubbery should be planted along the walls of the cloister walk which connects the Chapel with the School House. For this plantation we should choose Aralia pentaphylia as the predominating shrub.

No. 4—The School House.

As a contrast with the vines of the Chapel, we would suggest the use of Boston Ivy upon this building. The shade about the eastern walls is rather dense, and we notice that concrete has been laid about the foundation in the position that would ordinarily be occupied by planting. Further plantations are needed upon the north side of this building between the basement windows. The western side of this building is occupied by a veranda, and the region about it is apparently used so much as a playground that plantations are not likely to succeed there.

No. 2—Chapel of St. Paul's.

This building, furnished as it is with vines, presents a very agreeable aspect and we have nothing to criticize in regard to it. We should not like to see such a complete clothing of vines used too frequently as an appearance of dampness is likely to be suggested by it.

No. 1—The Lower School.

This building has an exceedingly well kept appearance. We must criticize the prominence of formal beds of nasturtiums and geraniums about its walls and approach drives. These flowers should either give way to others of a less pronounced garden origin, or their place should be taken by shrubbery. The addition of a plantation south of the hexagonal tower on the west side against the wall will be an improvement. The round plantation in the centre of the drive turn is excellent, and the border plantation between the turn and the hand ball building is also admirable, but the spruce hedge and outlying spruce trees are out of place and should be removed. Lilac might be used as a wall shrub in the northwest angle of the building behind the Gymnasium Annex.

No. 3—The Gymnasium Annex.

This building is doubtless a more or less temporary structure. It is of sufficient prominence, however, to require some screening. We would advise the use of vines and the addition of a close growth of white pine on the south side against the walls. The laundry yard is doubtless a necessity at this time. The lattice fence should be continued to complete the enclosure. The present vines are very good. The cedars should be removed, and in general, their use should be avoided.

No. 28—The Gymnasium.

Shrubbery is needed against the wall connecting this building with the Annex. Some ground cover is also to be desired about the base of the building. There is an opportunity for a large plantation at the eastern end. Vines should climb upon the roofs of the two entranceways, and we would suggest trumpet creeper for this position. The spruce opposite the southeast corner should be cut.

No. 27—The Racquet Courts.

This building is so different in style from those about it that it can hardly be made to group pleasantly with them. As it receives its light from overhead skylights, there can be little disadvantage on hiding it behind a near tree screen. To this end we advise that pines be planted closely about it upon the south and west sides and that the line of bushes which approaches it from the Hopkinton Road be extended to assist in this screening. While these plantations are gaining effective development, vines will go far to afford a quick covering. It will be noticed that there is a region of nearly open land bounded by this building, the Chapel, the school house, the gymnasium and the pond. Were the continuity of the woodland border of the pond completed by tree plantations along the water margin of this region, there can be no doubt that the pond scenery would be greatly enhanced and the shores enlivened in interest. This plantation should be similar in character to the present growth in which pine predominates. We would, therefore, advise that the pine plantations suggested for the west side of the Racquet Courts be extended along the pond borders as far as the Gymnasium Annex. Occasional deciduous trees should occur in this plantation. It should not approach near enough to the buildings to interfere with the proper entrance of light. We notice that the pond shore near the Racquet Court Building is supported by a stone retaining wall. Generally speaking, this sort of artificial treatment should be avoided, and the shores should be protected where necessary by rough stones laid in an irregular manner as a boulder bank.

No. 21, 22, 23—The Cottages.

The shrubbery about these buildings is not well massed, though the individual plants are in a flourishing state. There seems to be such a demand for flowers that gardens ought to be provided for them; the formal beds would find place within neat hedges or fences at the sides of the cottages or elsewhere. The stiff beds of dahlias and geranium are out of place upon lawns and terraces and as we have stated above, they should give place to plantations of greater variety and interest. The general aspect of these buildings is most homelike and pleasant, and but little improvement around them is needed.

No. 12—The School.

Elms should take the place of the spruces in the carriage turn. Vines should be used freely about the building, and we would suggest Boston Ivy as the best plant for the greater part of this covering. Wistaria might be used on the attached building at the eastern end. There are opportunities for shrub plantations on each side of the main entrance. A few elms are needed between the eastern end of the building and the cottages. The rear of the building should also receive attention, and the laundry yard fences in particular, will bear further screening. We suppose that the installation of the new laundry building will allow the removal of many of the laundry yards which are now attached to various of the school buildings.

No. 45—The Boiler House.

Screens of high-growing shrubs will go far to relieve the objectionable appearance of this structure.

No. 11—The Infirmary.

We have no special remark to make upon this building, except that the additional shrubs about its basement walls and vines upon the verandas and bay windows will render it more attractive.

No. 5—The Rectory.

The general aspect of the building and its surroundings is pleasing. We should like to see privet used occasionally in place of spruce.

No. 44—The Upper School Residence.

The planting about this building is, in general, good. A flower garden within an enclosure would be a distinct addition to the place and would allow the removal of some of the isolated beds. The plantation around the drive turn is a little monotonous and it would be improved if one or two gaps were made in it to allow views of the lawn at the rear.

No. 9—The Upper School.

This building is quite without planting. Shrubs are certainly needed about the basement walls to relieve a slightly stilted appearance, and Virginia Creeper upon the veranda and corners will make an agreeable supplement to this ground planting.

No. 8—The Upper School Dining-room;

No. 29—The Laundry Cottage;

No. 7—The Bicycle House;

No. 6—The Laundry and Carpenter Shop.

We believe the above buildings are to be removed.

The Buildings Near the Dam.

These buildings are in themselves not unpicturesque, and it will only be necessary at present to separate them from the unrelated buildings about them by retaining and improving the present heavy plantations.

Having now entered into a somewhat specific description of the treatment needed about the various buildings to make them more pleasing to the eye, it remains for us to discuss the problem of bringing these individual structures into an obvious relation to one another in order that they may appear upon the ground to belong to one another and in order that future growth may enhance, rather than destroy, an effect of unity. In our previous report we discussed the possibilities of various schemes of bringing the school buildings into one related group which could be adopted with some immediate effect by allowing the present arrangement of the buildings to enter into the plan. Our conclusion that the only scheme which can accomplish this result must turn upon the open meadow between the School, the Rectory, and the Upper School as a central feature still appears to us to offer the only practicable solution of the problem. We pointed out the fact that the principal buildings already occupy a part of the immediate banks of this meadow, and we observed that were a new building erected in the vicinity of the Upper School and were the trees which now block the meadow removed sufficiently to allow views across it, the buildings would at once appear to be brought into companionship by an evident grouping. It is plain that the addition of future buildings about the borders of the meadow would render this sense of unity only the more complete and that a glimpse of "The Lower Grounds" from this group of schools and dormitories would prove the tract a part of the school and attest that out-door sport is a recognized feature in the schoolboy's life. In order to gain this object, we observed that the removal of a part of the blocking growth of elms, maples and shrubbery which now makes the meadow nearly impassable, must be removed. This work should be carried out with some study to retain the best and most effective trees and to readjust the border of the woodland which extends from the School to the Upper School. Without a detailed topographical map this work must be carried out upon the ground by eye. In order to complete the opening of views a few trees on the higher ground between the Rectory and the Cottages may need removal, as well as a few opposite the school buildings. The latter trees should not be out until the last. When the cutting has been completed in the meadow, and the new building located upon its border, there will remain one incident in the landscape which will hurt the effect of the group of school buildings as a whole. That incident is the knot of buildings on the south side of the road opposite the Chapel and school house. To a limited degree these buildings will obscure views of the meadow from the Chapel and school, and they will also obscure views of the Chapel and school from the meadow and its borders. While it is true that to this extent they will not harmonize with the general scheme, yet their presence is not so objectionable that they will present a serious obstacle to the development of the plan as a whole.

We will now refer briefly to one other element affecting the improvement of the meadow, which is the Brook. Whatever future the Brook has before it, it needs to be relieved of service as a channel for the discharge of sewage. We have already touched upon the matter in our first report, but it at least deserves second mention. We do not think it necessary, however, to discuss the evils of the condition at length because we believe they are well understood and because we trust that improvements will be undertaken as soon as the value of the stream as a feature in the landscape and as a place of resort is made plain. As for the treatment of the Brook channel, we believe it will need but little attention, except to remove a few scars along the banks, which are the result of its present use. The meadow itself will require little improvement, and for many years it need only be cared for to the extent of mowing.

As regards the location of the proposed New Upper School, we stated in our first report that it should be placed between the present Upper School and the dam. In such a position it will not only be within convenient reach of the other buildings, but it will assist the scheme of the School's development about the meadow borders. If the building is to face the street, it should be designed with an attractive rear elevation in order that it may present an agreeable aspect when viewed from the opposite side of the meadow—in short, it should be a double-faced building. We are inclined to believe that the front line of the building should not be placed exactly parallel with the street, but that it should be directed somewhat toward the present Upper School. This device will bring its front line nearly to a right angle with the front line of the present Upper School and with the front lines of the principal group of buildings including the Chapel and the New Lower School. When it becomes necessary from time to time to erect other buildings they should be so placed that they will bear a definite relation to the meadow with the object of making it the centre of composition.

Respectfully submitted,

OLMSTED BROTHERS.

APPENDIX "E."

Reports and Recommendations of the Architectural Committee Appointed in 1911—Mr. Sturgis, Mr. Borie and Mr. Morris (Nov., 1913), (Oct., 1914), (Jan., 1916), (Dec., 1917).

November 1, 1913.

To the Board of Trustees,
St. Paul's School, Concord, N. H.

Gentlemen:

Your architects submit herewith their first report on the buildings and grounds.

On December 21, 1911, the Rector notified us of our appointment as a committee of alumni-architects. This appointment was made on the suggestion of the Alumni Association, which had before this time prepared surveys of the school property, made various studies of the existing buildings and the future needs. The Association felt that this work should be performed officially for the Trustees, rather than unofficially for the Association, and therefore petitioned the Trustees to appoint a committee to advise the Board on all matters connected with the development of the school property.

Immediately on receiving this notice, the committee met and accepted the appointment. This was reported to the Trustees January 22, 1912, and the Rector asked to arrange the business details with the chairman. This was done January 24, 1912, and a copy of an agreement dated March 29, 1912, is appended to this report.

The preliminary studies already referred to, done in 1910, and 1911 had touched upon the following matters: (1) The Lower

School, (2) The Administration Building, (3) The Infirmary, (4) The Chapel, (5) General Suggestion for Development, (6) Miscellaneous Repairs in Old Buildings, (7) A Comparative Study of Costs of Dormitories, and in June, 1911, a report to Dr. Ferguson, later to the Alumni Association, covering the above. Briefly, this advised: (1) Lower: to eliminate the study and recitation rooms, remodel within existing walls for better dormitories, lavatories, kitchen and offices, and build school outside. (2) Administration: to build a new building near the present site to include business offices. For both (1) and (2) drawings were made. (3) Infirmary: a new building on Hopkinton Road. (4) Chapel: to lengthen and increase seating, to remodel front benches (to ventilate, to add cloister). (5) General Development: this included the completion of the chapel quad with a new fifth form building replacing the middle—removing No. 3 and filling in part of the pond, and enlarging lower school playground by removing road. (6) To repair floor and rearrange heat in old Chapel, to establish white as general color for school buildings built of wood, to make immediate repairs in school common room, to defer any other expense (on kitchen and dining room) pending decision on a new building. (7) Cost of dormitories—fireproof bays not in dormitories but in rooms, single and double from $1,000 to $1,200 per pupil based on figures of the Lower, the Upper, four buildings at Middlesex, buildings at Groton, at Pomfret and at the Perkins Institution for the Blind at Watertown. This cost per pupil means the total cost of a building to accommodate not less than 50 boys, a married master and one or two others, common room, dining room, offices and servants.

All this had been done before your committee had been appointed —the last study on cost per pupil being done in December, 1911.

Immediately following the appointment work was begun and has been steadily followed ever since. If but little has been actually accomplished the Board will bear in mind that the subject is very complicated and the architects, although somewhat familiar in a general way with the school problems, have found it necessary to get much more detailed information before they could advise with any surety.

The various matters will be now given in detail, approximately in the order in which they were undertaken, as follows:

(1) The Lower, (2) Administration, (3) Infirmary, (4) Chapel, (5) General Plan, including Lower, Chapel, Middle, School, the Pond and the Playing Fields. This will be followed by a brief reference to some larger problems, Heat and Light Plant, Sewage, Turkey Pond, Power and Boating.

(1) The Lower: Plans were made for the purpose of studying the comparative advantages in accommodation, administration and cost, enlarging the Lower and keeping it self-contained or eliminating study, etc., and remodelling within the walls. The cost, based on accurate plans and safe estimates showed the self-contained building to cost $40,000, and the divided buildings to cost $50,000. The Architects are unanimous in advising the latter and also a modification which will improve the service and dining room and add materially to the accommodation of the master's house. The cost of this is estimated at $65,000, and with furniture and commission, $74,000.

(2) The new administration building had been planned with a view to giving a modern executive office to the school. This still appears to your architects an important matter. When the drawings were made for the Alumni Association no other building seemed so urgent. Since then added facilities have been made in the present building and the work is fairly well accommodated. The new building is, however, one of the important needs.

(3) The Infirmary. Shortly after the appointment of your architects, Mr. Armour's gift made the Infirmary possible. Your architects were prepared to advise the appointment of an architect for this work, but at the wish of the building committee and with the assent of Mr. Armour, themselves undertook it. The work is now under way. At the outset the building, complete with furniture and commission was estimated by your architects at $80,000. The accommodation thus outlined for us was found to be inadequate and the building was increased both in size and equipment. We still hoped to keep to the limit, but the estimates over-ran our figures and with every economy the building alone is now $85,000. To this is to be added some $12,000 for furniture, commission and incidentals, so that the total now is about $97,000, and only $80,000 available.

(4) The Chapel: Your architects were consulted not only about the increased accommodation, previously spoken of, but more espe-

cially about the ventilation. A cursory examination showed a condition so utterly at variance with good practice as to indicate that no knowledge of ventilation had been shown in the installation, and little or no attempt made to use the means provided. Your architects being told that no engineer was employed by the School, and that no one was responsible for this installation who would naturally be called upon under the circumstances, advised that Messrs. French & Hubbard, engineers, of Boston, be asked to make a report and advise as to desirable changes. This was done. The report confirmed the opinion of your architects as to the condition of the Chapel heating and ventilation. A plan was presented for remedying conditions at an estimated cost of $3,500. This is a marked instance of the trouble likely to be caused for lack of a comprehensive and carefully studied plan of heat and ventilation and power. Of this we will speak later. It is planned to execute this work at the earliest possible moment, but the engineers report that it cannot be done during term time. Also in connection with the chapel; the architects reaffirmed the practicability of increasing the seating capacity by moving the east wall of the sanctuary and inserting one new bay which would seat 6th formers between the sanctuary and the choir. It is thought that the cost of this might readily be met by allowing alumni to subscribe for stalls. This extension is shown on the general plan. The architects had opposed the idea of allowing any more busts or similar memorials to be placed in the ante-chapel, and heartily endorse the Rector's suggestion that a cloister garth be planned at the west end which would give a permanent and beautiful connection between the School and the Chapel, and a suitable place for memorials. This cloister is shown on the general plan.

(5) The General Plan. The various studies made from time to time have been embodied at the request of Dr. Shattuck, and at his cost, in a general plan and a general view, and also some detail studies. This plan shows the Lower, as rebuilt, the improvements around the Lower and on the margin of the pond, the Chapel Cloister and extension, the Fifth Form Building replacing the Middle, and accommodation here to replace number three. This completes the Chapel quad. The School is an old building neither well-planned nor well-built, originally; its plumbing and its dining room and service are wholly unfit. The expense of making it in any respect what it should be is more than is warranted by the results to be thus obtained. The removal of the building permits so placing

the new as to free the fine view toward the Playing Fields and to make possible a quad opposite the Chapel quad. Two schemes for this have been carefully studied by the architects. Each contemplates the same accommodation, about one hundred and twenty boys in three groups, with three house-masters, common rooms, and a dining hall. One plan, the one shown in the general view, leaves the space between the old Infirmary and the Master's house unoccupied, and one encroaches on the area. In one case the chief emphasis is placed on the open space, in the other it is placed on the size and balance of the new quad. Further study should determine which is the more important. The Playing Fields, one of the School's most beautiful features, is, in either case, opened up to view and brought into relation to the School group.

There are certain problems that are of vital importance, but which the Trustees may not have considered within the province of the architects. These are: (1) The power plant for heat and light. (2) The drainage system. (3) Hydraulic problems. Your architects believe that all these matters are so intimately related to the purely architectural matters referred to them, as to make it essential to consider them in the same way and at the same time. A brief outline of these three subjects will show why they appear to us to be a necessary part of our problem.

(1) The Power Plant. A central plant has been gradually developed to meet the increasing demands of the School. Such a plant is difficult to plan and execute for a definite group of new buildings where the needs and demands are known in advance. It is much more difficult to plan for a group of buildings already established, but composed of buildings constructed at different times, in different ways, for uses other than those they now serve, and which in many cases are but temporary to be replaced later by other buildings, perhaps in other locations. This problem is further complicated by questions of water power. One of the first matters referred to your architects was the Chapel ventilation. A condition of affairs was found there which would have been impossible under the oversight of any one familiar with problems of domestic engineering. We were asked to advise on this, and called in the engineers, Messrs. French & Hubbard (because there was no

engineer in the employ of the School, who was responsible for the plant). The engineers made their examination and, in conference with the architects, a report. Neither engineer nor architects knew with certainty just what lay behind the main steam supply which reached the Chapel, nor were they fully informed as to the conditions under which power was furnished by the plant—steam, electricity and water are available. Your architects believe that the central power plant, its connections, and the installation of heat and light, should be thoroughly studied and a report submitted with recommendations for increased economy and efficiency.

(2) Drainage. Modern drainage systems do not depend on wasting into rivers, much less into small streams. Such methods are not only unsanitary, but needlessly wasteful. The School has a large acreage under cultivation. It would seem as if the sewage should be utilized agriculturally. In any case, your architects believe that the subject should be carefully studied. After making themselves familiar with what exists, your architects, with the aid of the survey, could make a preliminary report, and this would place the subject in such shape as to enable the Trustees to form an opinion as to the next step.

(3) Hydraulic Problem. Under this head comes, first, the pond, and the power at the dam and, second, the sources of increase to make the power uniform and reliable. The possible loss of Long Pond as the rowing course, suggests the use of Great Turkey. A dam giving increased water area to serve as a rowing course, and increased power at the pond below, is an important matter. Your architects believe that this should be taken up carefully in connection with number one, and embodied in that report.

These matters are immediate and imperative. Questions are coming up constantly which demand solution at the heart of things—the power plant—and which require not only knowledge of existing conditions, but definite decisions as to future development. We have been asked to locate lights in the grounds. This can be done intelligently on the basis of an approved general plan which shows location of the present permanent buildings and the future buildings. At present, one does not even know whether conduits for light should run on the lines of the heating mains, or whether independent lines would be better.

We respectfully urge your early attention to these matters believing that they are of immediate importance. Your architects are at the service of the Board, but there should be expert examination of and report on the Power Plant, and there should be a special committee to consider both this report and the plans presented by the architects for the development of the property.

Respectfully submitted,

CHARLES L. BORIE, JR.,
BENJ. W. MORRIS,
R. CLIPSTON STURGES.

October 14, 1914.

The first Report of your architects, submitted in November, 1913, dealt more or less in detail with (1) The Lower, (2) The Administration, (3) The Infirmary, (4) The Chapel, (5) The General Plan and Problems of Heat, Light, Power and Drainage, and closed with these words, "There should be a Special Committee to consider both this report and the plans presented by the architects for the development of the property." There was no opportunity for discussion or action when the report was submitted in November, no committee was appointed and no action taken on the report.

(1) Lower School.

In January, 1912, the Headmaster of the Lower spoke of the necessity of remodelling. This had been pointed out in a report to the alumni, and a more complete report to the Rector. In March, data was given by the Headmaster on the basis of which two studies were made for the purpose of balancing the advantages of a self-contained school, and one with study and recitation rooms separated. These were made and with estimates of cost a careful comparison of the two. The architects and the Rector were agreed that the separate study building was the better solution and this was very carefully drawn out in all details, more especially the lavatories, the kitchen and service, the Matron's room, and the Headmaster's house. This work was completed in July, having occupied our attention for nearly six months.

The matter rested until the following year, when it was formally presented to the Trustees, November, 1913. At that time the execution of the work seemed imminent and, with the approval of the architects, Mr. Sylvester was, in the end of January, 1914, appointed architect for the Study building. He was given all the drawings and estimates made to date, and a carefully prepared schedule of dates to fix the execution of the various portions of the work to correspond with the school year.

The position, size, equipment and cost of this, based on fire-resisting construction had been tentatively determined. It was to be about 127,000 cu. ft., estimated to cost about $25,000. This amount was part of the total of $74,000 given in the November report.

The architect proceeded promptly with his studies under direction of the Building Committee and submitted drawings for the approval of the Board of Architects which contemplates a building of second-class construction of 172,000 cu. ft. and to cost $35,000.

The Advisory Architects understand that one of their duties is to encourage good construction and economical planning and to avoid unjustifiable expenditure. In this case, a smaller building had been studied and estimated with care. The Board could not approve poorer construction and a 40 per cent. increase in cost, even though these costs were in the form of estimates only.

A joint conference was held and the architect proceeded to modify his plans and bring them to a more economical basis. In May, a better plan was submitted for the approval of the Trustees.

The Trustees, unfortunately, had no knowledge of the detailed study which led to the report on the Lower, and of the location advised for the new building which had been submitted to them in November, 1913. No one of the architects was present at their May meeting to explain the plans or justify the report. The Trustees, on June 18, 1914, disapproved the whole scheme and directed the architect to study remodelling the Lower as a self-contained building. The general plan thus dismissed was identical with that submitted to the meeting of the Trustees of November, 1913, and presumably accepted; the study to remodel the Lower had already been done, reported upon, and paid for. The architects feel that this second study is inconsistent. The architects request consideration of the report, and a definite vote on the separation of the Study from the Lower School, and on the position for the Study if separate study is decided upon.

(2) Administration.

Various views in regard to the administration quarters have been placed before your architects at different times during the last three or four years. At one time it was thought possible to place under one roof all the administration of the School, both academic and financial, and it was suggested that such a building should be located in the neighborhood of the School and Rectory. This idea was abandoned as unsatisfactory. It was then suggested that a modern, small, fireproof building should be erected near the present administration building as permanent headquarters for all financial administration of the School. Drawings were made for this building. In the meantime, various substantial changes have been made in the present building, and temporarily this question appears to be solved.

(3) Infirmary.

The following is a brief history of the Infirmary, covering its inception, the original outline of requirements, the original estimates, later studies and later estimates, final development and actual contracts, and lastly, the actual cost as compared both with estimates and the contracts.

In March, 1912, the architects received instructions to make studies for an Infirmary which might have from 10 to 55 patients, and in May, presented two schemes and an estimate of $100,000. This amount was more than was available, and at the same time the architects were instructed that more beds than 55 should be available for epidemic conditions, and the present elastic scheme was presented, giving less than 55 under normal conditions (43) and nearly 100 under abnormal conditions. Even this building appeared likely to overrun $80,000, and the architects suggested a reduction which put the normal accommodation below 40. This work occupied until the middle of July, when a plan, apparently quite satisfactory, was presented to Mr. Armour, with the opinion of the architects that it could be built and furnished for $80,000.

The architects began at once on the final working drawings. These were well advanced when in September (two months later) a meeting of the Building Committee was called. The Committee decided on the addition of two observation wards, and much equipment not previously considered necessary. Two months more were occupied in the re-study of the plans, and determining with various other authorities who were called in, the details of administration as affecting the plans, and in the middle of November, the working drawings were authorized by the Committee. The architects then learned that the extreme accommodation of 90 would probably never be required, and as it was evident that the building would overrun the amount given ($80,000), the third floor was left unfinished. Without this the building has 37 beds under normal conditions, and 67 under abnormal. Brick had been bought in advance and the contract when accepted meant an obligation for $85,000 —without furniture and commission and incidentals. The work has been conducted with economy and care, and notwithstanding some inevitable changes, is completed practically without extras. The cost of the building complete is $85,000. The furniture estimated at $4,000, has cost about $4,100, and architectural service estimatedat $8,000, will have cost when complete, about $9,600. Of this large amount for architectural service but $1,450 is for the service of the three architects. Inasmuch as the architectural burden was almost entirely that of Mr. Sturgis, Messrs. Borie and Morris, after receiving $225 each, relinquished any further payment, requesting that their salary be made available for special superintendence when required. The actual draughting has cost $5,646 in round numbers. It has extended from March, 1912, well over two years. Nearly a year was occupied in the studies and working drawings. Four months or, at the outside, six months should have sufficed for this, if complete and accurate information had been furnished at the outset.

(4) The Chapel.

Your architects reported on the desirability of rearranging heating and ventilation of the Chapel, and suggested the employment of the engineers Messrs. French & Hubbard, for this purpose. They were employed in June, 1912; they presented a scheme which seemed to the architects entirely feasible and satisfactory, and in September, 1913, were authorized to make working drawings so that the work could be done in the holidays. This is now complete.

A method for the possible extension of the Chapel to increase its seating capacity was suggested in May, 1911, and in May, 1913, was considered by the architects and approved by them. Later, Mr. Vaughan, the architect of the Chapel, was asked his opinion and he also approved. The architects request the consideration of this matter by the Trustees and, if possible, a definite vote approving or disapproving this suggestion.

A permanent cloister to replace the present wooden one and enclosing a cloister garth was suggested in June, 1912, for the West end of the Chapel. Various schemes for this were blocked out by your architects, and a suggestion as to the design of it made in connection with item (5) and given to Mr. Goodhue, the architect of the Choir Building. The architects request consideration of this cloister garth by the Trustees, and a vote approving or disapproving this suggestion.

(5) Choir Building.

"Number 3," which has so long served the purpose of a Choir Practice Room, is an old wooden building which sooner or later must be removed. The present Choir sacristy is crowded, and it was suggested that a new building should be built to include Choir, Vestry and Choir Practice Room. Your architects suggest that this should be placed to the East of the Chapel, a building of two stories, to have, on the lower level, Choir Vesting Room, and, on the upper, Choir Practice Room, and having this building connected with the Chapel by a cloister corresponding in character with the cloister at the West end.

This was first definitely endorsed by the Rector the end of May, 1913, and studies made to determine its exact position, size, grades and relation both to the Chapel and the proposed new Middle. Later, in July, 1913, some more complete studies were made. In February, 1914, Bertram G. Goodhue was appointed architect of the building and the cloisters, and early in 1914 all material was placed in Mr. Goodhue's hands. Work on the drawings has not yet been authorized.

Your architects desire a vote upon the Choir Building and the two cloisters, either approving or disapproving the general scheme.

(6) Power Plant.

The architects felt that the Heat, Light and Power plant had been developed gradually, and had never been carefully studied as a whole for economy and efficiency of operation. They recommended that engineers should be employed for this important service. This was authorized, and on April 7, 1914, French & Hubbard were employed and have submitted their report. The architects have read the report, but are not informed as to what has been done in this connection. They believe, however, that it should receive the prompt and serious consideration of the Trustees.

Questions connected with the report of the engineers are likely at any time to come before the architects for study as, for example, the position of lights on the grounds evidently dependent on the plan of future development. This summer a somewhat similar question was decided by the School authorities without an opportunity for the architects to consider it, of hydrants for fire protection were installed without the knowledge and consequently without the consideration of future work.

Your architects desire early consideration of the engineer's report, and a definite decision as to the recommendations contained therein.

(7) School.

The building known for some time as "The School," has reached a point in age when it requires very extensive repairs and remodelling or removal and rebuilding. The architects were asked to estimate the cost of replacing this building on lines that contemplated the division of this unit into three parts, each with its Master, but the three sharing a common dining room. A series of studies were made of the cost of similar buildings in other schools and your architects presented a report showing what, in their judgment, should be the cost per pupil of such a building or group of buildings. Incidentally, to the study of the general plan, it was necessary to block out and locate these new buildings. This could not be done without some detailed study of the plan, and this detailed study, hardly more than indicated on the general plan, is available for use of the School. The studies made covered:

(1) August, 1911, block plans developed for cubic contents test.

(2) January, 1913, careful development of (1).

(3) January, 1913, adapted to the suggested quad opposite Chapel.

(4) February, 1913, plot plan showing scheme for group (both quads).

(5) Alternate scheme.

(6) May 29, 1913, careful development of (3).

(7) May 29, 1913, scheme of plan South of Maple trees suggested and developed in June. There is also much miscellaneous data of comparison with Perkins Institution.

One of the fundamental matters which your committee have continuously had in mind from the beginning, was an adequate and satisfactory road from the heart of the School activities to the Lower Ground. It has seemed to your architects that not only the natural and most direct is leaving the Dunbarton Road at a point between the Rectory and the old Infirmary and following the contours of the ground, proceed Southeast through the clump of pine trees at the South end of the present "School" building, down through the clump of oaks, and so join the present road and the "Lower." The present road would be discontinued.

It is perfectly evident, therefore, that the development of "the School" would a good deal depend upon the location of this road and these buildings would have direct relation with it. Your architects, although making a suggestion at this time for this matter, would like to report again in further detail to a Committee appointed for this purpose.

(8) Squash Courts and Other Athletic Buildings.

The development of the general plan suggested the removal of the Racquet Court Building, which is in poor condition, and of the Lower Five's Court, whose position interferes with the suggested development of the Lower School Playing Field.. The architects were asked to study this problem, which, it will be seen, involved a number of questions of administration, and also involved the broad question of the Gymnasium, and this in turn, involved the Hall.

In April, 1912, when the problems connected with the Lower were being studied, and it seemed desirable to consider the removal of the courts, the Rector advised that, in the future plans, courts, whether for racquet, squash, or fives, should be for the whole school, and neither by location or custom be reserved for portions of the School. Later, there was some discussion of this as affecting the location, the number, and the character of the courts. The general plan submitted to the Trustees in 1913, indicated a new Gymnasium group where all the athletic life of the School was centered (apart, of course, from the Playing Fields), but this never represented any concurrent opinion of the architects, and was not based on any careful study.

When, in December, 1913, the Rector informed the architects that money might be available for courts, and asked for advice as to location and cost, the site near the present gymnasium was considered, and an attempt made to determine the size of the building. It was found that, apart from the question of general use by the whole School, there were questions of dressing, locker and bathing facilities, which were matters of School habits, or administration; questions of the number and kind of courts (squash, squash racquets, fives, hand-ball, single and double), and of the relation of the building to the Gymnasium proper (with its baths and dressing rooms), and to the hockey house and the canoe house. Anything that affects radically the present Gymnasium would also affect the Hall, which is inadequate for School purposes and not as safe as such a hall should be. It is obvious that until these much involved matters are studied and settled, no instructions can be given the architects. Most of the problems, moreover, are ones on which the architects can give little assistance, as they are concerned primarily with the School administration. The architects should be able to help in determining the answers because all the problems involve architectural solutions, and of various solutions some may be practical and others not.

Your architects would respectfully suggest that a special Committee be appointed to study the whole athletic side of the School problem and determine the general line along which study is to be made, and that the necessary expense of this work be authorized.

(9) The Middle.

It has long seemed logical that there should be a building parallel with the Study to complete the Chapel quad. Item 5, the Choir building, falls naturally into this group. It was here that Mr. Vaughan proposed to place his very beautifully designed Library. The Library, which took its place, is now located elsewhere. Here your architects propose to put the Dormitory building to replace the Middle. This building is intended to be dormitories only, with Master, as the boys here would eat at the Upper.

Your architects desire a vote of the Trustees, either approving or disapproving a general scheme abandoning the present wooden building and replacing it eventually with a new Middle School approximately as indicated on the general plan.

(10) The Broad Walk.

From the first, your architects have felt that the beautiful shores of the pond have been wholly lost sight of in the arrangement of the buildings and the placing of lines of communication. In their first studies it was suggested that the shores be made more open and more attractive by the removal of No. 3 and the Lower squash courts, and enlarged and extended beyond the Lower Playing Field, and that there be an actual connection between the Upper and this portion of the School grounds. When Mr. Shurtleff was called in to advise in regard to this and other matters, he carried the suggestion a step further with an idea that is very heartily endorsed by the architects, and is indicated not only in his, but in the general plan submitted by the architects. In the judgment of your architects this plan has many advantages and no disadvantages, except such as can be readily overcome. Your architects desire the opinion of the Trustees, either in approval or disapproval, of this plan of a broad walk.

(11) Fire Prevention and Escapes.

The architects are not aware that any of the older buildings at the School approach the possibilities of modern fireproof or fire-resisting construction. Upon the School rests the responsibility of hundreds of lives, the vast majority of whom are housed on or above the second floor of non-fireproof buildings. It is, of course, impossible to provide fireproof quarters; but in the opinion of the architects it is not only possible, but incumbent upon the School to provide adequate and easily accessible means of escape which are in themselves incombustible. This should also apply to any rooms used for recitation or other purposes of assemblage at any hour of the day or night. That the School has escaped a calamity during all these years is rather a matter of good fortune than of adequate means of prevention, and the architects bespeak your consideration of the point as to whether this question is not the one which is by far the most important of any relating to the physical aspects of the School.

The architects recommend a careful survey respecting fire hazard and fire exits, with authority to consult experts and submit recommendation to a Committee of the Trustees.

The three architects who have given so much of their time to the School both before and since their official appointment, are keenly interested in this work and very anxious to have the School benefit by their trained professional experience. No one of them looks on his work as a profitable undertaking. Much of the study has been done without any remuneration whatever and with a considerable expenditure. All this has been done cheerfully, and there is a sufficient reward if we can feel that a real service is being done the School, and we suggest a closer continuous contact with the School's representatives, perhaps through Committees, with a free and full interchange of information and discussion before decisions are made.

The architects wish to emphasize the fact that, in their judgment, the proper time to study, discuss, and, as far as possible, determine basic principles and many details of an undertaking is at the inception of the work. It is impossible for an architect to study any problem intelligently unless information, as complete and accurate as possible, is given as a basis for preliminary studies.

CHARLES L. BORIE, Jr.,
BENJ. W. MORRIS,
R. CLIPSTON STURGIS.

This report prepared by R. C. S., largely revised and rewritten by C. L. B., Jr., and B. W. M., and finally edited by R. C. S., represents the unanimous opinion of all three.

SUMMARY.

October 14, 1914.

(1) Lower School.

Definite vote on the separation of the Study from the Lower School, and on the position for the Study if separate study is decided upon.

(2) Administration.

No vote needed at present.

(3) Infirmary.

No vote needed.

(4) Chapel.

Consideration of cloister garth, and a vote approving or disapproving the suggestion contained in report.

(5) Choir Building.

A vote upon the Choir Building and the two cloisters, either approving or disapproving the general scheme suggested.

(6) Power Plant.

Consideration and definite decision as to recommendations of Engineers' report.

(7) School.

A Committee appointed to receive further report from architects.

(8) Squash Courts and Other Athletic Buildings.

Special Committee appointed to study this whole athletic question.

(9) The Middle.

A vote of the Trustees either approving or disapproving general scheme of abandoning the present wooden building and replacing it eventually with new Middle School, approximately as indicated.

(10) The Broad Walk.

Vote of the Trustees either approving or disapproving this plan of a Broad Walk.

(11) Fire Prevention and Escapes.

Authority from Trustees to consult experts and submit recommendation to a committee of the Trustees.

REPORT OF THE ARCHITECTS, JANUARY 26, 1916

The Rector, in September, 1915, pointed out that the Dunbarton Road of ten years ago, with its leisurely traffic, is a very different thing from the motorized road of today. He asked the architects and Mr. Shurtleff to see what would be involved in the diversion of this road, and how such a change in the high-road might affect the roads thus made private. When Mr. Sturgis was at the School, November 18th, the proposed line was gone over, and later with Mr. Shurtleff November 19th. The study of the roads and the effect of the change on the quadrangle was authorized by the Rector the end of December.

The Dunbarton Road leads in the direction of Peterboro, Dublin, and Keene. As state roads are built, it seems more than likely that a highway between Concord and Keene will be one of them, and the traffic through the midst of the School greatly increased. If a change is to be made it should be before such a road is laid out.

The architects and Mr. Shurtleff have studied the matter and believe the plan feasible, and not one which would involve a cost out of proportion to the advantage to the School. They agree in advising a line approximately as shown, and the cost is estimated at approximately $12,000. We advise releasing to the city a strip sixty feet wide, sufficient for a state road, with a finished surface at present of twenty-five feet (A. A. S.. letter).

There would remain the Hopkinton Road which passes the head of the hill. Here would seem to be the best place to mark the more quiet School grounds with gates, and to make a square capable of handling cars at crowded times. The road through the grounds might be kept as at present, or reduced to a sixteen-foot road with grass on either side, leaving the paths where they are now under the rows of elms. From the square one (or two) other roads would lead toward the Lower playing field.

The plans showing these roads contain also suggestions for the completion of the Chapel quadrangle and the future development of a quad opposite. This represents but one way of solving a difficult problem. The solution here shown is carefully studied to fit the grades, and to give, at the lowest cost, the accommodation that will be needed.

In this, as in all work done and reports presented by your architects, the dominant thought has been the desire to help the School to build wisely and economically in the future, and every suggestion made involving a new building operation, has been made on the ground that it was a good business investment.

The Lower was so defective in class-room, sleeping, and washing accommodation as to be a serious drawback, and the building was so good as to warrant the expenditure advised by the architects. This work is in hand.

The School is as bad, and in some ways worse, than the Lower, as the service is poorer and the building, owing to its height, is much more dangerous in case of fire. The building is not worth the amount that would have to be spent on it to make it safe and suitable. It would be the poorest kind of economy to spend money on it.
The Rector's report (p. 14) outlines the sort of building which should take its place. Such buildings are shown on the plan, and the architects told the Rector two years ago that they should be built for $1,000 per pupil. When it is known that the Upper cost $4,000 per pupil ($280,000 for 70 boys), it will be seen that economy of plan and construction is the real service of your architects.

The Middle is an old wooden building, and should be looked upon as temporary. The Choir is very crowded in its vestry, and has its rehearsals on the second floor of an old wooden shack. The Upper needs some place near the school house for study. These three needs are covered in the building completing the Chapel quad. All this work may be far off, but the time to study and determine about future growth is when it is future and not immediate.

Your architects would urge the Trustees to consider the report submitted in October, 1914. Some of these have already received attention. The Lower has passed out of our hands and is under way, presumably satisfactorily. The Power Plant and the Fire Hazards have received attention, and stand pipes, sprinklers and fire-escapes have been installed by the School. The squash racquet building is built, a building independent and complete in itself. Your architects still think there should be a careful study of all the matters connected with the athletic life of the School. This will involve the new Speech House, a position for which is suggested on the plan. The Broad Walk is done, and the Bridge is in hand, with the architect appointed. A new Shop is to be built, and the location of this raises questions as to present Shop, and the development of the line of buildings adjacent to the dam, and possibly also questions relating to the teaching of shop work. In all these problems your architects feel that they can render a definite service to the School if they command the confidence of the Trustees, but that otherwise the work is useless.

It has been unfortunate that twice recently the architects have executed work for the School. The Infirmary and the squash racquet courts were so done. In both cases the problems had been studied, and there was no one else to do the work. In the case of the Lower, an architect has been appointed, and in case of the Broad Walk and other landscape work, Mr. Shurtleff has been employed. The work under Mr. Shurtleff has been done in close cooperation with the architects, the work under Mr. Sylvester has been done independently of the architects. We believe the former way the desirable one if the School is to get full benefit of the service of its architects.

General Surveys, Etc.

December 17, 1917.

Model of grounds completed, some of the buildings finished, others to be executed.

Pine Lines, etc.

Engineers have made survey of existing lines, steam, water, electric, gas, sewer, and these put on the general plan.

Turkey Pond.

Engineers have made report on possible increase of power.

New quads have been shown developed on the model, brought up to the date when the exclusion of vehicular traffic was suggested and advised employment of Goodhue for complete study of the enclosed quad.

New Dunbarton Road.

Complete working drawings, specifications and bids, Shurtleff for road, and advisory architects for bridge work. Suspended and alternate line suggested for road. Survey and approximate estimate made by Shurtleff and previous bidders. No action.

Surveys, Roads.

First study made by advisory architects before enclosed quad was suggested; second study based on enclosed quad. Neither study presented to the Trustees.

Planting, miscellaneous, as laid out by Shurtleff, revised by advisory architects, partly executed Autumn, 1917, remainder for Spring, 1918.

Additional Projects.

Locker Building.

Planned originally by R. C. S., changes to improve ventilation suggested; submitted to engineers for advice, executed by manager. Follow up to see if it proved satisfactory.

Shop.

Fundamental changes in shop proposed by general manager, submitted to architects for opinion. Advised against new building and in favor of making changes in present one. Submitted to the Trustees and referred by them to Mr. Perkins to confer with architects.

No action taken and no work thereon reported to architects.

Lower School.

Work of alterations of the old building continued in Summer of 1917 without consultation either with architects or engineers. This work includes dormitories, lavatories, fire exits, etc., but not remodelling of the first floor.

Friendly Hall.

R. C. S. asked to make drawings for a small building for servants under direction of Mrs. Drury. Work in hand, and building approaching completion; details of furniture to be settled.

Upper School.

Alterations in head master's house. Drawing made by R. C. S., approved, estimate received, work postponed. R. C. S. asked to consider and report on further alterations to Upper to improve servants' quarters.

Alterations Connected with New Proposed Bridge to the Upper and Entrance for Guests.

No drawing made.

Path to Upper.

Mr. Henry Carter offers to provide money for developing a path and building a bridge across low spot. Sketch and estimate for bridge made by R. C. S., and suggested that it should be executed under Mr. Kendall, with assistance from Mr. Piper's men.

Master's House.

R. C. S. requested to make a plan of a master's house to cost $10,000. Too small an amount under present conditions. Made plan and alternate elevations costing in neighborhood of $12,000.

Cloister.

Kingsbury Curtis wishes to give this from design of Goodhue. First design appeared inadequate. Goodhue to make revised design to include suggestion for western door to Chapel.

Main Gate.

Sheldon offers to give this and asked Lowell for design; architects advised that this is part of general quad, and should be designed in connection therewith, and urged appointment of Goodhue for all this work.

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